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CATALOG

OF THE

NEW HAMPSHIRE COLLEGE

OF

AGRICULTURE AND THE MECHANIC ARTS

DURHAM, NEW HAMPSHIRE

1912-1913

THE RUMFORD PRESS · CONCORD N.H. · VIRTUTE · EX · SCIENTIA ·
Rumford

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1912

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COLLEGE CALENDAR.

1912.

Sept.	6–10.	Examinations for admission begin Friday at 8.30 a. m.
Sept.	11.	Registration day. First semester begins.
Oct.	9.	Stated meeting of Trustees.
Dec.	20.	College closes Friday night.

1913. CHRISTMAS VACATION.

Jan.	2.	College opens Thursday at 8 a. m.
Jan.	8.	Stated meeting of Trustees.
Jan.	23–28.	Mid-year examinations.

WINTER VACATION.

Feb.	6.	Registration day. Second semester begins.
April	9.	Stated meeting of Trustees.
April		College closes Tuesday of Fast Day week at 4 p. m.

SPRING RECESS.

April		College opens Tuesday after Fast Day at 8 a. m.
May	14.	Graduation of Two-Year Course.
June	3.	Senior examinations completed at 4 p. m.
June	4–9.	Final examinations.
June	8.	Baccalaureate sermon, Sunday, at 10.45 a. m.
June	9.	Prize Drill, 8 p. m. in the Armory.
June	10.	Class Day. Stated meeting of Trustees.
June	11.	Commencement Day.
June	24.	Valentine Smith scholarship examinations.

SUMMER VACATION.

Sept.	5–9.	Examinations for admission begin Friday at 8.30 a. m.
Sept.	10.	Registration day. First semester begins.
Oct.	8.	Stated meeting of Trustees.
Dec.	23.	College closes Tuesday night.

1914. CHRISTMAS VACATION.

Jan.	6.	College opens Tuesday at 8. a. m.
Jan.	7.	Stated meeting of Trustees.
Jan.	22–27.	Mid-year examinations.

WINTER VACATION.

Feb.	5.	Registration day. Second semester begins.

BOARD OF TRUSTEES.

His Excellency, Gov. ROBERT P. BASS, A. M., *ex-officio*.
Pres. EDWARD T. FAIRCHILD, [redacted], LL. D., *ex-officio*.
Hon. WARREN BROWN, Hampton Falls, *President*.
Sept. 21, 1887, to June 14, 1913.
Hon. LUCIEN THOMPSON, Durham, *Secretary*.
July 28, 1892, to June 14, 1913.
WALTER DREW, Colebrook.
Aug. 31, 1902, to Aug. 31, 1914.
Hon. ROSECRANS W. PILLSBURY, Londonderry.
Oct. 7, 1897, to Oct 7, 1915.
Hon. NAHUM J. BACHELDER, M. S., A. M., East Andover.
Jan. 5, 1905, to Jan. 5, 1914.
Hon. EDWARD H. WASON, B. S., Nashua, *Alumni Trustee*.
July 1, 1907, to July 1, 1913.
Hon. GEORGE H. BINGHAM, A. B., LL. B., Manchester.
Dec. 2, 1908, to Dec. 2 1914.
RICHARD W. SULLOWAY, A. B., Franklin.
Oct. 9, 1909, to Oct. 9, 1912.
Hon. H. L. BOUTWELL, B. S., LL. B., Malden, Mass., *Alumni Trustee*.
Aug. 30, 1911, to Aug. 30, 1914.
HAROLD E. HARDY, B. S., Hollis.
Oct. 16, 1911, to Oct, 16, 1914.
WILLIAM H. CALDWELL, B. S., Peterborough.
July 29, 1912, to July 29, 1915.

Hon. WALTER M. PARKER, A. B., Manchester, *Treasurer*.

OFFICERS OF ADMINISTRATION.

EDWARD T. FAIRCHILD, [redacted], LL. D., *President of the College*.
CHARLES H. PETTEE, A. M., C. E., *Dean*.
JOHN C. KENDALL, B. S., *Director of Extension Work*.
MABEL HODGKINS, A. B., B. S., *Librarian*.
CHARLOTTE A. THOMPSON, *Assistant Librarian*.
CHARLES W. STONE, A. M., *College Farmer*.
OSCAR W. STRAW, *Engineer and Curator of Buildings*.
MARCIA N. SANDERS, *Matron of Smith Hall*.
MIRIAM L. HOBBS, *Purchasing Agent*.
FLORENCE TRIMMER, B. S., *Registrar*.
M. GENEVIEVE BURT, *Bookkeeper*.
BEATRICE M. RICHMOND, *Stenographer*.

THE COLLEGE FACULTY.

EDWARD T. FAIRCHILD, [redacted], LL. D., *President*.
CHARLES H. PETTEE, A. M., C. E., *Dean and Professor of Mathematics*.

CLARENCE W. SCOTT, A. M., *Professor of History and Political Economy.*

FREDERICK W. TAYLOR, B. Sc. (Agr.), *Professor of Agronomy.*

RICHARD WHORISKEY, Jr., A. B., *Professor of Modern Languages.*

FREDERIC W. PUTNAM, B. S., *Professor of Drawing and Design.*

CHARLES E. HEWITT, B. S., M. M. E., *Professor of Electrical Engineering.*

ERNEST R. GROVES, A. B., B. D., *Professor of Psychology and Sociology.*

FORREST E. CARDULLO, M.E., *Professor of Mechanical Engineering.*

FRED RASMUSSEN, B. S. A., *Professor of Dairying.*

C. FLOYD JACKSON, B. S., M. A., *Professor of Zoölogy and Entomology.*

WALTER C. O'KANE, M. S., *Professor of Economic Entomology.*

JOHN H. FOSTER, B. S., M. F., *Professor of Forestry.*

WILLARD J. FISHER, Ph. D., *Professor of Physics.*

ALFRED E. RICHARDS, Ph. D., *Professor of English.*

ORMAND R. BUTLER, Ph. D., *Professor of Botany.*

CHARLES A. HUNT, B. S., First Lieutenant, Seventh U. S. Infantry, *Professor of Military Science and Tactics.*

JOSEPH H. GOURLEY, B. S., *Professor of Horticulture.*

CHARLES JAMES, F. I. C., *Professor of Chemistry.*

O. L. ECKMAN, B. S. (Agr.), *Professor of Animal Husbandry.*

FRANK C. MOORE, A. B., *Associate Professor of Mathematics.*

MABEL HODGKINS, A. B., B. S., *Librarian and Secretary of the Faculty.*

GUY C. SMITH, Ph. B., *Associate Professor of Economics.*

WILLIAM H. WOLFF, M. S., *Assistant Professor of Pomology.*

FRANK E. McKONE, B. S., *Assistant Professor of Mechanical Engineering.*

GEORGE A. PERLEY, M. S., *Assistant Professor of Physical Chemistry.*

FRANK APP, B. S., *Assistant Professor of Agronomy.*

LEON W. HITCHCOCK, B. S., *Assistant Professor of Electrical Engineering.*

FREDERICK W. WHITMAN, A. B., *Assistant Professor of Modern Languages.*

CHARLES C. STECK, A. B., M. S., *Assistant Professor of Mathematics.*

THOMAS J. LATON, B. S., *Instructor in Drawing.*

SIDNEY H. KATZ, B. S., C. E., *Instructor in Chemistry.*

CAROLINE A. BLACK, Ph. D., *Instructor in Botany.*

DAVID LUMSDEN, *Instructor in Floriculture and Landscape Gardening.*

W. ROSS WILSON, B. S. (Agr.), *Instructor in Dairying.*

JAMES H. PHILBRICK, *Instructor in Woodworking and Foundry Work.*
GEORGE H. DONHAM, *Instructor in Machine Work and Forging.*
JOHN M. JONES, M. S., *Instructor in Animal Husbandry.*
SARAH E. PETTEE, B. S., *Instructor in French and English.*
J. H. PIERPONT, *Assistant in Dairying.*
CHARLES F. WHITTEMORE, B. S., *Assistant in Chemistry.*
CHARLES H. HADLEY, Jr., B. S., *Assistant in Zoölogy.*

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

BOARD OF CONTROL.

Hon. WARREN BROWN,	Hampton Falls
Hon. N. J. BACHELDER, A. M., M. S.,	East Andover
Hon. E. H. WASON, B. S.	Nashua
W. H. CALDWELL, B. S.	Peterborough
Pres. E. T. FAIRCHILD, [illegible], LL. D., *ex-officio.*	Durham

THE STATION STAFF.

JOHN C. KENDALL, B. S., *Director.*
FREDERICK W. TAYLOR, B. Sc. (Agr.), *Agronomist.*
FRED RASMUSSEN, B. S. A., *Dairyman.*
B. E. CURRY, A. B., *Chemist.*
W. C. O'KANE, M. S., *Entomologist.*
J. H. FOSTER, B. S., M. F., *Forester.*
J. H. GOURLEY, B. S., *Horticulturist.*
O. R. BUTLER, Ph. D., *Botanist.*
J. M. JONES, M. S., *Animal Husbandman.*
C. W. STONE, A. M., *Farmer and Vice-Director.*
W. H. WOLFF, M. S., *Assistant Horticulturist.*
DAVID LUMSDEN, *Assistant in Floriculture.*
T. O. SMITH, A. B., *Assistant Chemist.*
O. L. ECKMAN, B. S. (Agr.), *Assistant Animal Husbandman.*
CAROLINE A. BLACK, Ph. D., *Assistant Botanist.*
FRANK APP, B. S., *Assistant Agronomist.*
C. H. HADLEY, Jr., B. S., *Assistant Entomologist.*
MABEL HODGKINS, A. B., B. S., *Librarian.*
MIRIAM L. HOBBS, *Purchasing Agent.*
M. GENEVIEVE BURT, *Bookkeeper.*
LAURA B. BICKFORD, *Stenographer.*
ELIZABETH E. MEHAFFEY, *Assistant Librarian and Mailing Clerk.*
S. EDNA DAVIS, *Stenographer.*

FOUNDATION AND ENDOWMENT.

The New Hampshire College of Agriculture and the Mechanic Arts was incorporated by the state Legislature in 1866, under the provisions of the act of Congress, approved July 2, 1862, entitled "An act donating public lands to the several states and territories which may provide colleges for the benefit of agriculture and the mechanic arts," the grant of land having been accepted by an act of Legislature, approved July 9, 1863.

The act of 1862 provides that the income from the investment of the money realized from the sale of the lands shall be appropriated "to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, . . . in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The "Morrill Bill," which was approved August 30, 1890, and received the assent of the state by an act of Legislature, approved February 13, 1891, provides an appropriation for the more complete endowment and support of the colleges for the benefit of agriculture and the mechanic arts, established under the provisions of "the act of 1862."

The appropriation under the Morrill act is "to be applied only to instruction in agriculture, the mechanic arts, the English language, and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life, and to the facilities for such instruction."

Under an act of Congress approved March 2, 1887, which received state legislative assent August 4, 1887, was established that department of the college known as the Agricultural Experiment Station, the purpose of which was "to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science."

Benjamin Thompson, who died January 30, 1890, was a resident of Durham, and a farmer by profession. He had at heart the agricultural interests of his native state, and in the furtherance of those interests he bequeathed to it at his death his whole estate with a few minor reservations.

Mr. Thompson's final statement of the object of his bequest was as follows: "My object being mainly to promote the improvement of agriculture, though willing that the college to be established should also provide for the mechanic arts, it is my will that the institution to be established by the state . . . shall be called and designated

. . . The New Hampshire College of Agriculture and the Mechanic Arts, if that shall be the wish of the state; and that in addition to the instruction to be given therein, as provided by my said will, there shall be taught only such other arts or sciences as may be necessary to enable said state to fully avail itself of said donation of lands by the government in good faith, which two branches of instruction shall be the leading objects of said institution or college."

By the provisions of the will, the income from this source became available in 1910. This endowment amounts to nearly $800,000, the annual income from which is nearly $32,000.

The state Legislature accepted the Thompson bequest March 5, 1891, and on April 10 of the same year appropriated $100,000 for buildings. Approximately $50,000 was realized from the sale of property and from other sources. In 1893 an additional appropriation of $35,000 was made by the state for completing and furnishing the buildings. Accordingly, in 1893, the college was moved from its first home at Hanover to its present location at Durham.

The general government of the college is vested in a board of thirteen trustees. The governor of the state and the president of the college are trustees, *ex-officio*; the alumni of the college elect two trustees; and all other trustees are appointed by the governor of the state, with the advice and consent of the council.

The college is executing the trust reposed in it by giving instruction in the various courses described in this catalog, under the prescribed heads of "agriculture" and "the mechanic arts."

SITUATION.

Durham, the present site of the college, is on the Portland division of the Boston and Maine Railroad, sixty-two miles from Boston, and about midway between Rockingham and the city of Dover, being five miles from the latter place.

SUNDAY SERVICES.

Although the only church in Durham is nominally Congregational, it is attended by citizens of all denominations, and sectarian lines are never drawn. It is conveniently situated, and offers ample opportunity for religious observances.

The Young Men's Christian Association of the college conducts meetings at the church Sunday afternoons, with faculty and student leaders.

GENERAL INFORMATION.

New Hampshire College offers the following courses:

I. Agricultural Division.

a. Four-Year Courses.

1. Animal Husbandry Course.

2. Forestry Course.
3. Horticultural Course.
4. General Agricultural Course.

b. Two-Year Course.
c. Ten-Week Course.
d. One-Week Course.

II. Arts and Science Division.
a. Arts and Science General Course.
b. Normal Manual Training Course.

III. Engineering Division.
a. Chemical Engineering Course.
b. Electrical Engineering Course.
c. Mechanical Engineering Course.

The college is a part of the public school system of the state. It stands in its agricultural, mechanical engineering, electrical engineering, technical chemistry, and general scientific courses, in the same relation to the high schools that the high schools stand to the grammar schools, and that these in turn stand to the elementary schools. In other words, it is a continuation of the grades of the public school system of the state, with special reference to the industrial pursuits, and aims to give a practical training that shall fit the student to deal with the problems of life.

TUITION AND FEES.

Tuition is $60 a year; fees, which include all charges commonly considered extras, except those for breakage and damage to college property, are $20 a year. They are payable in advance in two equal instalments, one on the first day of each semester. By vote of the Trustees, all members of the senior class are assessed a graduation fee of $5.00.

SCHOLARSHIPS.

Scholarships are awarded each semester at the discretion of the faculty to resident students of New Hampshire. They may be forfeited at any time for misconduct and will not be awarded, except by special permission of the president, to students in the four-year courses who have failed to secure an average grade of sixty or over in the previous semester. They are given for the purpose of aiding deserving students and will be withdrawn from those who use intoxicating liquor or tobacco.

Conant Scholarships.—There are twenty-seven Conant scholarships, each paying tuition, $60; fees, $20; cash, $20,—total, $100. These are assigned under the following conditions:

They are to be given to young men taking agricultural courses.

Each town in Cheshire County is entitled to one scholarship, and Jaffrey is entitled to two.

They will be reserved for their respective towns until August 1 of

each year. Those not taken by students from Cheshire County, and those in excess of the number of towns, will then be assigned to agricultural students from other parts of the state, and may be divided at the discretion of the president.

Senatorial Scholarships.—There are twenty-four senatorial scholarships, one for each senatorial district. Each scholarship is to pay tuition of $60. Senatorial scholarships not filled may be assigned to students from other localities at the discretion of the faculty; they are open to students in all courses.

Grange Scholarships.—Each subordinate and Pomona Grange in New Hampshire has the privilege of appointing one student annually to a free scholarship in any of the four-year or two-year courses in the college. Each scholarship is to pay the tuition of $60. The method of appointment is entirely at the option of the Grange; it may be by election, competitive examination, or otherwise. Holders of these scholarships need not be members of the Grange, but must be resident within the state.

Valentine Smith Scholarships.—Through the generosity of the late Mr. Hamilton Smith of Durham, the sum of $10,000 has been given to the college to establish the Valentine Smith scholarships.

"The income thus accruing to the college shall be given to the graduate of an approved high school or academy who shall, upon examination, be judged to have the most thorough preparation for admission to the college; *provided,*

"That if the student receiving this scholarship shall at any time prove unworthy, in the judgment of the faculty, by reason of defective scholarship or character, he shall forfeit his claim to the student most deserving; and

"That if the student receiving this scholarship shall cease to be a member of the college, the income from this fund, for the unexpired term, shall be awarded to the student most deserving in character and scholarship."

By vote of the faculty, these scholarships will be forfeited by failure to obtain an average grade of 75 per cent. for any semester. These scholarships yield $400 annually or one hundred dollars to each holder. Competitive examinations for this scholarship will be held at the college in June and at no other time. Applicants must present themselves at the registrar's office at 8.30 a. m., June 24, 1913. They are not restricted to residents of New Hampshire.

PRIZES.

Bailey Prize.—Dr. C. H. Bailey of Gardner, Mass., and E. A. Bailey, B. S., of Keene, N. H., offer a prize of ten dollars for proficiency in chemistry.

Erskine Mason Memorial Prize.—Mrs. Erskine Mason of Stamford,

Conn., has invested one hundred dollars as a memorial to her son, a member of the class of 1893, the income of which is to be given, for the present, to that member of the senior class who has made the greatest improvement during his course.

Chase–Davis Memorial Medals.—The Glee Club has offered to furnish yearly a gold medal to the senior who has won his N. H. and stands highest in his studies, and a silver medal to the senior who has won his N. H. and stands second in his studies, the medals to be known as the Chase-Davis memorial medals.

Individual Drill Prizes:

First. A gold medal given by the college.

Second. A silver medal given by the college.

Third. A bronze medal given by the college.

Junior Officer's Prize:

A saber, with belt complete, given to the junior cadet officer who excels in executing certain required movements or evolutions with a company.

COLLEGE AID TO STUDENTS.

Students obtain considerable financial aid by janitorships, and work on the farm and in the greenhouse. They also find employment with the power and service department of the college and with the experiment station.

Students may purchase at cost all books, drawing instruments, materials, etc., at the college book-store in Thompson Hall.

ESTIMATE OF FRESHMAN EXPENSES.

Tuition	Free	$60.00
Text-books	$12.00 to	20.00
Military uniform for new students	20.00 to	20.00
Drawing instruments and materials	12.00 to	25.00
Fees	20.00 to	20.00
Room rent, including heat and light	30.00 to	60.00
Board, $3.25 to $3.60 per week, for thirty-six weeks	117.00 to	129.60
Total	$211.00	$334.60

Expenses of two-year agricultural students are about $15 less than above schedule.

This total does not include incidentals (such as traveling expenses, laundry, etc.).

Room rent is estimated on the supposition that two students occupy the same room or suite of rooms.

The college has no rooms for men students. Rooms may be obtained either furnished or unfurnished, in buildings under private control, and

are for the most part provided with heating apparatus, electric lights and baths.

Women students, unless living at home, are required to room in Smith Hall, the woman's dormitory.

Table board is $4.00 a week and prices for rooms range from $1.25 to $2.00 a week. Rooms will be assigned to old students in order of their seniority, and to new students according to their date of application. Applications for rooms should be made to the dean.

REGISTRATION AND RULES OF CONDUCT.

Every undergraduate student who desires to attend the college during a given semester is required to register at the registrar's office before 4 p. m. of the first day of such semester.

The dean has general supervision of registration, attendance, excuses, election of studies and removal of entrance conditions. Full details of these matters may be found in the "Student Rules," copies of which may be obtained of the registrar.

WARNINGS AND REPORTS OF STANDING.

Warnings of unsatisfactory work are sent to parents and guardians near the middle of each semester.

Reports of standing are sent to parents and guardians at the close of each semester.

REQUIREMENTS FOR ADMISSION TO FOUR-YEAR COURSES.

All candidates for admission to college must present satisfactory testimonials of good moral character.

Candidates for admission to the freshman class must offer a total of fifteen units.

Equivalent of work done in an approved high school for one year of five recitations a week will be accepted for one unit. However, the work of one year of four recitations a week may be accepted for one unit in a limited number of subjects.

It is assumed that two hours of manual training or laboratory work are equivalent to one hour of classroom work.

REQUIRED SUBJECTS. ALL COURSES.

Of the fifteen entrance units ten will be required as follows:

Group A (English)	4 units
" B (American History or Ancient History)	1 unit
" C (Algebra and Plane Geometry)	2 units
" D (Physics)	1 unit
" E (French or German)	2 units
Total	10 units

ELECTIVE SUBJECTS.

At least two additional units must be taken from Groups B to F, inclusive. One half-year or more of review mathematics is advised and will be counted toward these two units. Students taking the Arts and Science Course, who do not intend to continue the study of Physics may substitute for it a year's work in some other science. Solid Geometry is necessary for carrying on the work of the Engineering Courses and, if not presented for entrance, must be taken as an extra during the freshman year. A short time only is allowed for this subject, since it is given solely as an emergency measure. If possible it should be completed in the preparatory school. Engineering students are further advised to present Plane Trigonometry for entrance.

The three remaining units may be chosen from any group. Entrance examinations, however, will be confined to subjects included in Groups A to F, inclusive.

GROUP A, ENGLISH.

Preparation in English has two main objects: (1) command of correct and clear English, spoken and written; (2) ability to read with accuracy, intelligence and appreciation.

The first object requires instruction in grammar and composition. The second object is sought by means of two lists of books, headed respectively Reading and Study, from which may be framed a progressive course in literature covering four years. A candidate will not be accepted in English whose work is notably deficient in point of spelling, punctuation, phraseology or division into paragraphs.

Reading.—The aim of this course is to foster in the student the habit of intelligent reading, and to develop a taste for good literature, by giving him a first-hand knowledge of some of its best specimens. He should read the books carefully, but his attention should not be so fixed upon details that he fails to appreciate the main purpose and charm of that he reads.

Study.—This part of the requirement is intended as a natural and logical continuation of the student's earlier reading, with greater stress laid upon form and style, the exact meaning of words and phrases, and the understanding of allusions. For this close reading are provided a play, a group of poems, an oration and an essay.

The first part of the examination will be upon the books prescribed for reading, and the form of the examination will usually be the writing of short paragraphs on several topics which the candidate may choose out of a considerable number. It may include also questions upon grammar and the simpler principles of rhetoric.

The second part of the examination will include composition and those books comprised in the list headed Study. The test in composition will consist of one or more essays, developing a theme through

several paragraphs; the subjects will be drawn from the books prescribed for study, from the candidate's other studies, and from his personal knowledge and experiences quite apart from reading.

The following list of books is required for reading in 1913, 1914 and 1915. Two units are to be selected from each group. Each unit is followed by a semicolon or a period.

I. The Old Testament, comprising at least the chief narrative episodes in Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the "Odyssey," with the omission, if desired, of Books I, II, III, IV, V, XV, XVI, XVII; the "Iliad," with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's "Aeneid." The "Odyssey," "Iliad," and "Aeneid" should be read in English translations of recognized literary excellence.

For any unit of this group a unit from any other group may be substituted.

II. Shakespeare's "Merchant of Venice"; "Midsummer Night's Dream"; "As You Like It"; "Twelfth Night"; "Henry the Fifth"; "Julius Caesar."

III. Defoe's "Robinson Crusoe," Part I; Goldsmith's "Vicar of Wakefield"; Scott's "Ivanhoe" or "Quentin Durward"; Hawthorne's "House of the Seven Gables"; Dickens's "David Copperfield" or "Tale of Two Cities"; Thackeray's "Henry Esmond"; Mrs. Gaskell's "Cranford"; George Eliot's "Silas Marner"; Stevenson's "Treasure Island."

IV. Bunyan's "Pilgrim's Progress," Part I; the "Sir Roger de Coverley" papers in "The Spectator"; Franklin's "Autobiography" (condensed); Irving's "Sketch Book"; Macaulay's "Essays on Lord Clive" and "Warren Hastings"; Thackeray's "English Humourists"; "Selections" from Lincoln, including at least the two Inaugurals, the Speeches in Independence Hall and at Gettysburg, the Last Public Address, and the Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's "Oregon Trail"; either Thoreau's "Walden," or Huxley's "Autobiography" and selections from "Lay Sermons," including the addresses on Improving Natural Knowledge, A Liberal Education, and A Piece of Chalk; Stevenson's "Inland Voyage" and "Travels with a Donkey."

V. Palgrave's "Golden Treasury" (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper, and Burns; Gray's "Elegy in a Country Churchyard" and Goldsmith's "Deserted Village"; Coleridge's "Ancient Mariner" and Lowell's "Vision of Sir Launfal"; Scott's "Lady of the Lake"; Byron's "Childe Harold," Canto IV, and "Prisoner of Chillon"; Palgrave's "Golden Treasury" (First Series), Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's "Raven," Longfellow's "Courtship of Miles Standish," and Whittier's "Snow-Bound"; Macaulay's "Lays of Ancient

Rome" and Arnold's "Sohrab and Rustum"; Tennyson's "Gareth and Lynette," "Lancelot and Elaine," and "The Passing of Arthur"; Browning's "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Hervé Riel," "Pheidippides," "My Last Duchess," "Up at a Villa—Down in the City."

The books for study in 1913, 1914, and 1915 are:

Shakespeare's "Macbeth"; Milton's "L'Allegro," "Il Penseroso," and "Comus"; either Burke's "Speech on Conciliation with America" or both Washington's "Farewell Address" and Webster's "First Bunker Hill Oration"; either Macaulay's "Life of Johnson" or Carlyle's "Essay on Burns."

GROUP B, HISTORY.

Although there are excellent text-books in History, adequate preparation cannot be obtained by text-book work only. Some collateral work is necessary, whatever text-book is used, and with certain text-books a large amount is necessary. The details of the preparatory work in History are fully stated in A History Syllabus for Secondary Schools, by the New England History Teachers' Association. Boston, D. C. Heath & Co., 1904.

1. American History and Civics.

The work in Civics must include at least a study of the Constitution of the United States. Representative text-books are Channing's Students' History, Hart's Essentials of American History, Montgomery's Students' History and Larned's History of the United States. —1 unit.

2. Ancient History (Grecian and Roman).

Representative text-books are Morey's Greek History, Myers' History of Greece, Allen's Roman People, Morey's Roman History, Myers' Rome, West's Ancient World, and Wolfson's Essentials of Ancient History. —1 unit.

3. English History.

Representative text-books are Larned's History of England, Montgomery's English History, and Walker's Essentials of English History. An excellent preparation may be made by the combined use of Trenholme's Outline of English History, Cheyney's Short History of England and Cheyney's Readings in English History. —1 unit.

4. Mediaeval and Modern History.

Representative text-books are Harding's Essentials of Mediaeval and Modern History and Myers' Mediaeval and Modern History. —1 unit.

GROUP C, MATHEMATICS.

1. Algebra.

Through quadratic equations, including radicals, fractional and negative exponents, binomial theorem and progressions,—five periods per week for one year. —1 unit.

2. Plane Geometry.

The equivalent of Wells' presentation. —1 unit.

3. Review Mathematics.

One half-year's work. —½ unit.
One year's work. —1 unit.

4. Solid Geometry.

The equivalent of Wells' presentation. —½ unit.

5. Plane Trigonometry.

The equivalent of Wells' presentation. —½ unit.

GROUP D, SCIENCE.

Accompanying the certificates for each of the sciences the student MUST present at entrance a note-book containing records and drawings of his or her observations and experiments in the laboratory, which must bear the certificate of the teacher in charge that the work was done personally in the laboratory.

1. Botany.

Coulter's Text-book of Botany, Bergen's Foundations of Botany, or an approved equivalent, occupying five periods per week for one year, of which at least one is devoted to laboratory work. —1 unit.

2. Botany and Zoölogy.

Bergen's Elements of Botany, or an approved equivalent, occupying five periods per week for a half year, of which at least one is devoted to laboratory work. —½ unit.

Kellogg's Elementary Zoölogy, Linville and Kelly's Text-book in General Zoölogy. Jordan, Kellogg and Heath's Animals, Needham's Lessons in Zoölogy, Coulton's Zoölogy, or an approved equivalent, occupying five periods per week for a half year, of which at least one is devoted to laboratory work. —½ unit.

3. Chemistry.

Elementary Inorganic Chemistry equivalent to the work covered in Remsen's Briefer Course, Hessler & Smith's Essentials, McPherson & Henderson's Elementary Study or Newell's Descriptive Chemistry, accompanied in each instance with laboratory practice. —1 unit.

4. Geology.

Leconte's Compend or an approved equivalent. —½ unit.

5. Physics.

The preparation required for entrance in Physics shall be an equivalent of five exercises a week for one year, of which at least two are devoted to laboratory work. —1 unit.

GROUP E, MODERN LANGUAGES.

In the year 1912–1913, preparatory schools will be required to certify with regard to the oral and aural qualifications of their students.

1. French.

Two years are required for preparation in French. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, (3) abundant translation of simple English prose into idiomatic French, (4) reading of from 100 to 175 pages of French prose, (5) writing French from dictation. Work of the second year should include (1) the reading of from 250 to 400 pages of easy modern prose, (2) constant practice in translating from English into French variations of the text read, (3) frequent paraphrases of the text read, (4) dictation. —2 units.

2. German.

Two years are required for preparation in German. Work of the first year should include (1) careful drill in pronunciation, (2) drill upon the rudiments of grammar, such as the inflection of the articles, the common nouns, adjectives, pronouns, and strong and weak verbs, upon the uses of the prepositions, the modal auxiliaries and the rules of syntax and word order, (3) writing from dictation, (4) the reading of from 75 to 100 pages of prose, (5) translation from English into German. Work of the second year should include (1) the reading of from 150 to 200 pages of prose, (2) constant practice in translating from English into German variations of the text read, (3) dictation, (4) continued drill upon the rudiments of grammar, (5) frequent paraphrases of the text read. —2 units.

GROUP F, ANCIENT LANGUAGES.

Students entering from approved schools may receive credit in their certificates for the following work in Greek or Latin:

1. Greek, Elementary.

Books I and II of Xenophon's Anabasis, Books III and IV of the Anabasis or their equivalent in other Attic prose. Two years' work. —2 units.

2. Latin, Elementary.

Grammar and four books of Caesar. Two years' work. —2 units.

3. Latin, Advanced.

Virgil, six books,
Cicero, six orations. —2 units.

GROUP G, EXTRA ELECTIVES.

Suitable credit may be given on entrance requirements for properly certified high school work in subjects approved by the state superintendent of education and taught in approved preparatory schools.

Certificates.

In the place of examinations, certificates will be received from approved preparatory schools, including all that have been approved by the superintendent of public instruction in New Hampshire. Approval of a school will be withdrawn whenever it appears that the work of the school does not reach the standard required by the college.

A mere passing mark should not render a person eligible for a certificate. The instructor must decide in accordance with his own standards whether the graduate's preparation qualifies him for entrance upon college work.

The candidate will be examined on all requirements not covered by the certificate. If the certificate makes any exception in the case of a student who has not regularly graduated from an approved school, the statement will not be accepted in full and the student may be examined on such subjects as the committee requires. A certificate will be accepted for that work only which has been done in the certifying school, or which is necessarily involved in the work done there. Divided certificates from two or more schools will be accepted when the preparatory work has been done in more than one institution.

In case the work of a graduate has not been up to certificate grade in all subjects, the principal is requested to fill out and sign the general certificate and to fill out the group certificates, as a matter of information, signing only such as are of certificate grade.

The certificate must be made out on a blank furnished by the college and should be mailed to the dean at the close of the school year.

Certificate forms will be furnished upon application.

Candidates for advanced standing are also examined in the studies that have been pursued by the class which they propose to enter.

Examinations will be given in June and September in the subjects presented for admission. Candidates will present themselves at the registrar's office at 8.30 a. m. on the first day of the examinations.

SCHEDULE FOR JUNE AND SEPTEMBER ENTRANCE EXAMINATIONS.

Tuesday, June 24, 1913.
Friday, September 5, 1913.

Mediaeval and Modern History	8.30—10.30 A. M.
Algebra	10.30—12.30 A. M.
English	1.30— 3.30 P. M.
Plane Geometry	3.30— 5.30 P. M.

Wednesday, June 25, 1913.
Saturday, September 6, 1913.

English History	8.30—10.30 A. M.
Physics	10.30—12.30 A. M.
Latin, elementary	1.30— 3.30 P. M.
Latin, advanced	3.30— 5.30 P. M.

Thursday, June 26, 1913.
Monday, September 8, 1913.

Chemistry	8.30—10.30 A. M.
American History	10.30—12.30 A. M.
French	1.30— 3.30 P. M.
Solid Geometry	3.30— 5.30 P. M.

Friday, June 27, 1913.
Tuesday, September 9, 1913.

Ancient History	8.30—10.30 A. M.
Plane Trigonometry	10.30—12.30 A. M.
German	1.30— 3.30 P. M.
Botany	3.30— 5.30 P. M.

Saturday, June 28, 1913.
Wednesday, September 10, 1913.

Geology	8.30—10.30 A. M.
Zoölogy	10.30—12.30 A. M.
Greek, elementary	1.30— 3.30 P. M.

BUILDINGS.

Thompson Hall is the main administrative building and contains the offices of the President, the Dean, the Registrar and the Purchasing Agent. Here also are located the departments of Drawing and Machine Design, Modern Languages, Mathematics and Zoölogy.

Conant Hall is given over wholly to the departments of Chemistry, Physics and Electrical Engineering.

Morrill Hall contains the Experiment Station library of over twenty-five hundred volumes, the office of the Director of the Experiment Sta-

tion, and the laboratories, lecture rooms and offices of the departments of Agronomy, Animal Husbandry, Horticulture and Forestry.

Nesmith Hall is occupied by the departments of Chemistry and Botany of the Experiment Station and contains the laboratory and lecture room of the department of Botany of the college.

The Mechanical Engineering Building contains a wood shop, a machine shop, a forge shop, a foundry and the laboratories of the Mechanical Engineering department.

In the Armory are the lecture rooms and offices of the Military department, the rooms of the College Club and a large drill hall or gymnasium.

The Dairy Building is arranged and equipped in the most up-to-date and sanitary manner. It contains a commercial creamery, with separator room, churning room and cold storage room; laboratories for giving instruction in milk testing, milk inspection, farm butter and cheese making and bacteriology; a reading and exhibition room; a class room and offices.

The college has also an insectary, a large modern dairy barn, several smaller barns for sheep, horses, etc., and a range of greenhouses especially planned for carrying on up-to-date work in greenhouse management.

Smith Hall, the woman's dormitory, was made possible by the generosity of Mrs. Shirley Onderdonk, of Durham, who gave sixteen thousand dollars as a memorial to her mother, Mrs. Alice Hamilton Smith. The remainder of the cost, ten thousand dollars, was provided by the state. The building furnishes accommodations for thirty-two students.

In accordance with an act of consolidation between the libraries of Durham and the college, the books of the Durham public library and the college are all shelved in one building and form the Hamilton Smith public library. This consolidation makes an especially good collection, the scientific books of the college supplementing well the more popular books of the town library. The consolidated libraries number about 30,000 bound volumes and 10,500 pamphlets. The departments of Psychology and of History and Political Science are located in the library building.

Aside from the main library, each department has its working library of the more technical books and those which are of special use in the laboratories and work-shops.

LABORATORIES AND EQUIPMENT.

AGRONOMY.

This department is provided with a collection of dried specimens of the different forage crops; the more important varieties of corn, wheat

and oats; and with a large number of lantern slides, grass charts and other illustrative material. The soil physics laboratory is equipped with soil bins, a new compacting machine, chemical and torsion balances and various kinds of physical apparatus for the study of soils, including that for the determination of specific gravity and for the making of mechanical analyses.

The agricultural museum contains many of the latest models of the different makes of farm machinery, tools and appliances, including plows, cultivators, harrows, mowers, rakes, corn and grain binders, threshers, manure spreaders, gasolene engines, different kinds of cattle ties and various makes of patent wire fences.

The college farm, with its 380 acres of land, has a variety of soils and soil conditions suited to the growth of nearly all the important farm crops, and thus offers excellent opportunities for practical work and demonstration in the department of agronomy.

ANIMAL HUSBANDRY.

For the various courses in animal husbandry an extensive use is made of the live stock of the college farm. The dairy herd consists of representative animals of the following breeds: Ayrshires, Guernseys, Jerseys and Holsteins. The college owns seven head of horses representing the draft type, and in order to become acquainted with the carriage and roadster types, the students are taken to various stock farms where these types may be inspected and judged.

For the study of the different breeds of sheep and swine the experiment station flocks of pure bred Southdowns, Dorset Horns, Shropshires, Hampshires, Spanish Merinos and Rambouillet and herds of Yorkshires are used.

In the agricultural building a large room is fitted up for the judging of live stock; instruments for precise measurements are provided and score cards with a scale of points for each kind of animal are used.

The classroom is provided with a stereopticon lantern and a large collection of lantern slides is used to show the leading individuals of the different breeds of live stock. The herd books of the most prominent breeds are used for the purpose of familiarizing the student with methods of tracing pedigrees and the practices of breeders' associations.

BOTANY.

The botanical laboratory is supplied with a good herbarium, charts, microscopes and the other necessary appliances.

CHEMISTRY.

The several chemical laboratories are modern in design and well equipped. Each is supplied with the latest forms of apparatus required for its particular work. Besides all necessary glass and porcelain ware,

this includes water baths, drying ovens, combustion, muffle and assay furnaces, platinum dishes and crucibles, polariscope, spectroscope, balances, lantern and other lecture appliances, etc.

DAIRYING.

The dairy department, with its new dairy building, offers excellent opportunities for instruction in technical and practical dairy work. The college creamery is well equipped with up-to-date machinery, each machine being run by a separate electric motor.

In addition to the product of the college herd, milk and cream are received from over forty farms in Durham and vicinity. By this arrangement sufficient material is furnished for practical work. The farm dairy is equipped with the leading makes of hand separator and hand and small power churns suitable for private dairies. The milk testing and milk inspection laboratory is equipped with Babcock testers, sediment testers, acidimeters and other apparatus necessary for inspection of milk and cream for fat and other qualities.

DRAWING.

For free-hand model-drawing and for mathematical drawing there is a good supply of geometric models; and for free-hand industrial drawing the nucleus of a good collection exists, consisting of plaster casts of historic ornament, details of human form and antique sculpture, as well as vases and common objects. There is an excellent collection of working models and machines for machine drawing, and various machines in other departments are available for this work.

ELECTRICAL ENGINEERING.

The electrical engineering laboratories consist of two dynamo rooms, a transformer room, a photometer room, a storage battery room, a laboratory for the calibration of measuring instruments, etc. In the main dynamo room there is a large distributing switchboard on which are mounted instruments, switches and plugging devices so arranged that it is possible to connect the various laboratories, also each lecture room, and convey thereto direct current and single, two phase and three phase alternating currents of different voltages and periodicities. In addition to the regular laboratory equipment, there is available for testing purposes a fully equipped sub-station having a capacity of 75,000 watts supplied by the Rockingham County Power and Light Company of Portsmouth, N. H. A part of this equipment consists of an automatic induction feeder regulator, including contact making voltmeter, reversing switch etc. The general equipment of the department includes various dynamos and motors for both direct and alternating currents, several transformers, the necessary measuring instruments, storage batteries, etc., designed and arranged so as to be adapted for the needs of special laboratory work.

FARM DEPARTMENT.

An institution like New Hampshire College is not complete without a well-equipped, well-organized and properly managed farm. The farm serves as a laboratory for much of the agricultural instruction, where approved farm methods in practice may be seen and where the students may gain experience by actually performing the work with their own hands.

New Hampshire College farm comprises about 380 acres, of which about 70 are in fine timber, and about 120 are tillage land. Of this land 17 acres are in use by the horticultural department for gardens and orchards, 8 are used for experimental work in the agronomy department, and 8 for sheep investigations in the animal husbandry department. A farm comprising 40 acres of tillage land and 160 of pasture is rented by the farm department.

The farm buildings consist of a large storage barn, two 125-ton silos, a well-appointed, sanitary dairy stable ell, which will accommodate 38 head of cows, and a large basement under the main barn for housing young stock and dry cows. A new horse barn 36 by 67 feet with basement and hay storage loft has been erected and is now occupied by the farm and horticultural departments.

FORESTRY.

The demand for instruction in forestry at the state college has been increasing from year to year and the Legislature of 1911 provided for a separate department of forestry. It is now possible to educate and, in a measure, train agricultural students in scientific forestry. The course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. For those who desire to make forestry their life work, every encouragement and assistance will be given.

Durham is well situated with reference to the study of woodlot forestry. All types of native second growth forests are found near by, and the college owns a tract of sixty acres of old growth timber where exceptional opportunities are given for the study of mature forests. There are other areas where practice will be given in establishing plantations of forest trees by various methods. A nursery for the growing of seedling forest trees has been started.

All the necessary instruments for making forest maps and measurements together with collections of wood specimens, lantern slides and photographs are available in connection with this work.

HORTICULTURE.

The lecture room is fitted up with a stereopticon lantern and the collection of lantern slides is being continually enlarged. The pomological and vegetable gardening laboratories are of original design and offer

every facility for modern work. A great many varieties of vegetables are grown in the experiment station trial ground, and these offer exceptional opportunities for identification and study in the laboratory for some time after field conditions have gone by. The orchards, gardens and grounds also offer opportunities for demonstrating the theories advocated in the lecture-room. Propagation of fruits, shrubs and flowering plants is practised. A fine collection of Vilmorin charts is owned by the department.

MECHANICAL ENGINEERING.

The mechanical laboratory equipment includes a 40 horse-power steam engine; a steam boiler especially equipped for testing; a large duplex pump; nozzles for measurements during hydraulic tests; a 10-inch standpipe, a 6,000-gallon measuring tank and other apparatus for an extensive series of hydraulic experiments; a 50,000-pound Olsen machine with the necessary tools and measuring instruments for tension, compression and transverse tests; a 12 horse-power gas engine; a Westinghouse air-brake pump with locomotive and tender attachments; steam and gas engine indicators; a surface condenser; a Bristol pyrometer; a cement testing machine with the necessary sieves and other apparatus for testing according to the recommendations of the committee for cement testing; and the usual supply of scales, gauges, thermometers and small apparatus.

PHYSICS.

The department has a collection of the usual apparatus for lecture illustration and laboratory work, which is being rapidly increased.

SHOPWORK.

The wood shop is one of the best equipped pattern shops in the country. It is supplied with benches and the necessary tools to accommodate twenty students at one time. Other equipment consists of a universal pattern maker's saw, board-planer, buzz-planer, band saw, speed-lathes and a large pattern maker's lathe with molding and boring attachments.

The equipment of the machine shop consists of engine lathes, a speed-lathe, a vertical drill, a Flather planer, a large universal milling machine, a plain milling machine, a shaper, a power hack saw, a tool grinder, 12 benches with vises; and a large number of small tools, including micrometer, calipers and gauges necessary for accurate work.

In the forge shop are 17 Sturtevant down-draft forges with anvils and necessary tools. The blast to the forges is furnished by a No. 4 blower, and the smoke carried away by a 60-inch exhauster. These are driven by a small steam-engine.

All the shops are operated by 550-volt three-phase induction motors,

suitably connected to line shafting and driving the tools by the "group plan."

SURVEYING.

The surveying instruments are sufficient in number and of the most approved pattern.

ZOOLOGY.

The zoölogical laboratory is well supplied with aquaria, microscopes, dissecting tools, charts, reference books and collections. The latter include a representative display of the birds of New Hampshire, and a very large collection of the insects of the state arranged in glass covered boxes.

MUSEUM.

The museum had for a nucleus the collection made during the state geölogical survey. To this additions have been made from various sources. Specimens are being collected to illustrate the zoölogy of New Hampshire, and New Hampshire collectors and naturalists are invited to make the museum the permanent depository of their collections.

MILITARY DEPARTMENT.

This department is in charge of an officer of the United States regular army, detailed by the war department, as professor of military science and tactics. Military instruction, which is required by law, is both theoretical and practical, the former having special reference to the duties of the line.

The organization is a battalion of four companies with a band, officered by cadets selected for character, soldierly bearing and efficiency. The federal government has furnished U. S. magazine rifles, model 1898, and equipment for 200 men. Attention is paid to rifle practice, the government supplying ample ammunition and target materials, and the college a good range within four minutes' walk of the college buildings, with firing points at 200 and 300 yards. The rolling country in the vicinity of the college furnishes the best opportunities for extended order drill and field exercises, the athletic field for close order drills, and the gymnasium gives ample room for indoor work.

The cadets wear when on duty, and may at other times, a gray cloth uniform as prescribed by standing orders in the War Department. White collars, gloves and waist belts of a standard pattern must be purchased with the uniform and the students have the option of purchasing a high black calf shoe for uniform wear, at a special low price. The cost of a uniform for the new student is $19.95, not including shoes, and its use may make possible a saving in civilian clothing.

Service in this department is optional for members of the senior class; all other students, excepting those excused by competent authority, are required to attend both drills and recitations. Seniors who

elect drill and are appointed cadet officers have their college fees refunded at the end of the semester if their work has been satisfactory. Seniors who elect drill and are not appointed cadet officers are not required to be armed or to drill in the ranks, but will attend all drills and perform such duties as may be required of them.

Upon the graduation of each class the names of those students who have shown special aptitude for military service are reported to the adjutant-general of the army and to the adjutant-general of the state, and they receive a special certificate for military proficiency.

FOUR-YEAR COURSES.

AGRICULTURAL DIVISION.

The courses of this division are designed for the general education and scientific training of students in the various economic branches of agriculture. The lecture and recitation work of the classroom is supplemented largely by practical exercises in the laboratories. Seminary courses are also given, especially for seniors and advanced students. The whole curriculum is so arranged that about one third of the studies may be termed cultural, one third, scientific, and one third, technical. During junior and senior years the student has elective options in certain courses of study which enable him to specialize in animal husbandry and dairying, horticulture, forestry or general agriculture.

While the two-year course is intended to give the student as thorough training in the science and practical details of farm operations as the time will allow, it does not give the opportunity for a broad general foundation of pure and applied science that the four-year courses afford; the latter courses aim primarily to combine a college education with that of a technical vocation. Many of the graduates of the four-year courses return to the farm for the purpose of putting into practice the knowledge and training of their college work, and many of them are becoming successful and prosperous citizens of the community; others who have no farms of their own accept salaried positions as superintendents or foremen on the dairy, fruit or truck farms of large owners; still others take positions as teachers of science and agriculture in our secondary and high schools or as assistants in our agricultural colleges and experiment stations.

The agricultural division offers the following four-year courses of study:

a. Animal Husbandry and Dairying.
b. Forestry.
c. Horticulture.
d. General Agriculture.

Animal Husbandry and Dairy Course. This course is designed for those students who wish to specialize either in animal husbandry or

dairying. Election of courses of instruction between these two departments may be made throughout the junior and senior years. The dairy building with its new and complete equipment, together with the additional courses and increased facilities for instruction in the animal husbandry department, make this course especially attractive.

Forestry Course. The demand for a special and separate course in forestry has been increasing from year to year, and in view of the extent and importance of the forests and forestry operations within the state, the establishment of such a course seems well justified. The Legislature of 1911 very generously provided funds for the creation of a forestry department at the college which, for the present, will be housed on the second floor of Morrill Hall. This course is intended to provide not only a special training in forestry, but a broad general training in other lines of agriculture closely related to it. The college forest of sixty acres of old growth pine and hemlock furnishes a splendid laboratory and ample opportunity for studying forestry questions.

Horticultural Course. This is the course for those students who contemplate making a specialty of some line of horticultural work. Several advanced courses in botany will be required, while during the senior year opportunity will be given to elect courses in other departments. The horticultural department is well equipped with gardens, orchards, greenhouses and laboratories for the study of the different phases of this industry, especially fruit growing, which is so prominent in the agriculture of the state.

General Agricultural Course. This course is intended for those students who desire to secure a general training in the art and science of agriculture without definite specialization along some particular line. During both the junior and senior years the student may elect one or more courses of instruction in whatever department he wishes. The course is especially suited for those who expect to become teachers of agriculture as well as for those who intend to practise general farming.

Students graduating from the four-year courses in agriculture in 1915 and thereafter must present to the Dean on or before the second Tuesday preceding commencement, satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least six months subsequent to the age of 16.

Students graduating from the forestry course must have spent at least three months in practical forest work, which time will be counted as a part of the six months' requirement.

Students in the agricultural division must have completed all the required courses and have at least 154 credit hours for graduation in 1913.

ARTS AND SCIENCE DIVISION.

In the Arts and Science Division those who wish a college education for its cultural value are given an academic training which especially prepares them for teaching in secondary schools, or for special work in graduate schools. By means of the group system of elective studies an opportunity is given to specialize in History, English, Mathematics, Physics, Chemistry, Modern Languages, Agriculture, Zoölogy, Botany, Drawing, Philosophy, Pedagogy and Biology. A special course is given for students who wish to teach manual training in high schools.

ENGINEERING DIVISION.

Chemical Engineering Course.

This course is intended to fit for the career of professional chemist or chemical engineer, and to give a good foundation for original and independent chemical research.

Instruction is imparted by lectures, recitations and a large amount of carefully supervised laboratory work. The laboratory course is largely an individual one and the work of each student is conducted with reference, not only to the particular object he may have in view, but also to the acquirement of a broad knowledge of chemical science. The student is given a thorough training in German and French to enable him to read with ease the chemical literature; a thorough grounding in mathematics, necessary for advanced theoretical chemistry or chemical engineering; a somewhat limited amount of special engineering work both mechanical and electrical; and a thorough undergraduate training in theoretical and applied chemistry. He is encouraged to develop the power of solving chemical problems by independent thought through the aid of the reference works and chemical periodicals which the library contains. Owing to the fact that the laboratories are becoming crowded the number of students taking this course is limited to six in each class. These six are chosen at the close of the freshman year from those who have applied. Fitness to become successful chemists will alone determine the choice made.

Electrical Engineering Course.

The electrical engineering course is intended to meet the demands of a young man fitting himself for practical and professional engineering in connection with the various applications of electricity.

By means of lectures, recitations and laboratory work, the subjects of the course are brought to the attention of the student in such a manner as to emphasize, not only the present needs of the practitioner and engineer, but to give him the groundwork that will enable him to grasp and understand the constantly increasing number of problems that require solution.

The instruction aims to impart a complete practical and theoretical knowledge of the best modern types of electrical machines and appliances and the methods of designing, building and operating them.

The rapid progress in recent years in applying electricity to commercial uses, renders it difficult, if not impossible, for one without a technical education to gain prominence in the work and be intrusted with its more responsible positions.

Mechanical Engineering Course.

Mechanical engineering is concerned with the design, construction, care and operation of machinery.

The special studies are mathematical, including a large amount of drawing; technical, pertaining directly to the professional work of the engineer; and general.

The study of the scientific principles underlying the work of the engineer is accompanied throughout the course by actual practice in mechanical operations and scientific research, by training in the use of tools for working wood and metals, and by experimental tests and demonstrations in the mechanical, chemical and physical laboratories.

COURSES FOR WOMEN.

Women attending the college may elect any course laid down in the curriculum, subject to the conditions prescribed for all students. They may omit manual labor on the farm and in the shop, and substitute other studies.

The Arts and Science Division, with its electives, is specially prepared for women. They may elect from the courses in Agriculture and Chemistry subjects which will afford excellent opportunities for the study of the natural sciences, and from the engineering courses those which pertain to Mathematics and Physics.

POST-GRADUATE AND SPECIAL COURSES.

The college offers opportunity for post-graduate study in Agriculture, Biology and Chemistry, and on the completion of satisfactory work advanced degrees will be given. Persons of mature years presenting satisfactory evidence of their ability to complete any desired course of study may be admitted as special students by vote of the faculty.

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*FOUR-YEAR COURSES.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. APP.

1. Farm Crops.

Lectures and recitations upon the history, use, value and methods of culture of our various farm crops, with particular reference to New

*Students receiving a condition in any prerequisite subject may be allowed to take the advanced subject at the discretion of the instructor, with the proviso that if a warning is received in the advanced subject, it must be dropped.

England conditions. Laboratory practice in judging and scoring the different varieties of grains and grasses. For Agricultural Sophomores.

Three exercises per week. 1st S.

2. Soils and Soil Physics.

Lectures and recitations upon the formation, kinds and physical properties of soils; the movements and conservation of soil moisture; the relation of heat and air to soil; the nature and physical effects of tillage and fertilizers; laboratory work and experimentation with soils to show the physical effects of different conditions and texture. For Agricultural Juniors. *Three exercises per week. 2d S.*

3. Soil Management and Fertility.

An advanced course in soils for those who have shown a special aptitude in the preceding course. The processes of soil formation, the physics and chemistry of soils, soil classification and mapping and the principles of fertility will be discussed. The lecture work will be supplemented by laboratory and field experimentation. Elective for Agricultural Seniors. *Two exercises per week. 2d S.*

4. Manures and Fertilizers.

Lectures, text-book and seminary work on farm manures and commercial fertilizers. For Agricultural Seniors.

Two exercises per week. 2d S.

5. Agricultural Seminar.

Library and reference work, the preparation of bibliographies, a study of the work and history of agricultural colleges and experiment stations. Lectures upon the history of agriculture. For Agricultural Seniors. *Two exercises per week. 1st S.*

7. Rural Engineering.

Lectures and recitations upon the principles of construction of farm buildings, barns and silos; construction and maintenance of country roads; principles of draft; farm motors and machinery; farm water supply and sanitation. Practical work in testing and comparing various makes and kinds of farm machinery. Elective for Agricultural Seniors.

Three exercises per week. 1st S.

8. Farm Equipment and Management.

Lectures and recitations upon the selection, planning and equipment of farms; fencing, drainage, harvesting and tillage implements; different systems of farming; buying and selling methods; coöperation; practical problems in farm management. For Agricultural Juniors, except Forestry students. *Three exercises per week. 1st S.*

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. JONES.

1. Types and Breeds of Live Stock.

A study of the different breeds of horses, cattle, sheep, and swine in respect to their origin, history, development, characteristics, and

adaptability to different conditions of climate and soil. One afternoon each week is devoted to judging the different breeds. For Agricutural Sophomores. *Three exercises per week. 1st S.*

2. Animal Breeding.

Lectures and recitations upon the laws of heredity; value of selection in improving and maintaining a high standard of excellence in farm stock; variation, cause and extent; methods of breeding, including discussion of inbreeding, crossing and grading, and practice in tracing pedigrees. For Juniors in Animal Husbandry and Dairy Course. Elective for others. *Three exercises per week. 2d S.*

3. Feeds and Feeding.

Lectures and recitations upon the laws of nutrition; composition and digestibility of feed stuffs; influence of feed on the animal body; a study of leading cereals and by-products; feeding standards. Practice will be given in computing and compounding rations for various purposes. For Agricultural Juniors, except students in Forestry.

Three exercises per week. 2d S.

4. Veterinary Science.

Lectures and recitations upon the anatomy and physiology of the domesticated animals. Special attention is paid to the study of the horse and cow. Skeletons, various anatomical specimens, models, charts and lantern slides are used to make the subject as practical as possible. This course is designed to give a foundation for the study of animal diseases, surgery, etc. For Animal Husbandry Juniors. Elective for others. *Three exercises per week. 1st S.*

5. Poultry.

Lectures and recitations on the different classes and breeds of poultry; breeding and feeding; location and building of poultry houses; a study of incubators and brooders; methods of preventing disease. Practice will be given in scoring. Elective for Agricultural Seniors.

Two exercises per week. 1st S.

6. Advanced Live Stock.

A course designed especially for those students who have shown proficiency in previous courses relating to live stock. The work consists of advanced judging and measurement, and special problems concerning the various breeds. Students intending to compete for the Live Stock Judging Team should elect this course. Elective for Agricultural Juniors. *Two exercises per week. 1st S.*

7. Live Stock Management.

A study of the general management and care of horses, cattle, sheep and swine; fitting for market and exhibition; approved methods of stabling; sanitation; maintaining health and vigor in live stock. For Seniors in Animal Husbandry and Dairy Course. Elective for others.

Two exercises per week. 1st S.

8. Veterinary Science.

Lectures and recitations upon the principal diseases and ailments of farm animals; medicines, and methods of administering; minor surgery; holding a post mortem examination. For Animal Husbandry Juniors. Elective for others.

Prerequisite—Animal Husbandry 4. Three exercises per week. 2d S.

9. Sheep Raising.

Lectures and recitations upon the breeds of sheep; adaptability to this section; care and management; fitting for the shows, and feeding for market purposes; the raising of hot house lambs; also practical exercises in judging the various breeds. Elective for Agricultural Seniors.

Three exercises per week. 1st S.

10. Advanced Veterinary Science.

A lecture course consisting of advanced study of animal diseases, methods of treatment and prevention. Elective for Agricultural Seniors.

Prerequisites—Animal Husbandry 4 and 8.

Three exercises per week. 2d S.

BOTANY.

PROF. BUTLER, MISS BLACK.

1. General Botany.

Morphology and histology of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students.

Three exercises per week. 1st S.

2. General Botany.

Organography and classification of plants. Lectures and laboratory work. For Agricultural Sophomores. Elective for other students.

Prerequisite—Botany 1. Three exercises per week. 2d S.

15. Plant Physiology.

Structure and properties of the cell, absorption and movement of water; metabolism; growth and irritability. Lectures and laboratory work. For Forestry, Horticultural and General Agricultural Juniors.

Prerequisite—Botany 2. Three exercises per week. 1st S.

16. Plant Histology.

Technique. Characterization and differentiation of plant tissues. Comparative histology. Occasional lectures; laboratory work. For Forestry Juniors. Elective for other students.

Prerequisite—Botany 2. Two exercises per week. 2d S.

17. Bacteriology.

Technique. Morphology and biology of the more common non-pathogenic and pathogenic bacteria. Lectures and laboratory work. For Animal Husbandry and Dairy Juniors. Elective for Arts and Science and Agricultural Juniors and Seniors.

Three exercises per week. 1st S.

18. Systematic Botany.

Classification and identification of plants. For Forestry and Horticultural Seniors. Elective for other students.

Prerequisite—Botany 2. *Two exercises per week. 2d S.*

19. Plant Pathology.

Diseases of plants, their symptoms, causes and prevention. Lectures and laboratory work. For Forestry and Horticultural Seniors. Elective for other students.

Prerequisite—Botany 16. *Three exercises per week. 1st S.*

20. Mycology.

Morphology and biology of the fungi. For advanced students. Occasional lectures, laboratory work.

Prerequisite—Botany 19. *Two exercises per week. 2d S.*

21. Embryology.

Technique. Origin and development of the embryo. For advanced students. Occasional lectures; laboratory work.

Prerequisite—Botany 16. *Two exercises per week. 1st S.*

22. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 2d S.

23. Advanced Botany.

For advanced students. Prerequisites will depend on the nature of the subject selected for study.

Credit and hours by arrangement. 1st S.

CHEMISTRY.

PROF. JAMES, ASST. PROF. PERLEY, MR. KATZ, MR. WHITTEMORE.

1. Inorganic Chemistry.

Lectures and recitations on general and theoretical chemistry, illustrated by experiments, charts, specimens, lantern views, etc. Solution of chemical problems will be required. For Agricultural and Engineering Freshmen. Elective for Arts and Science Freshmen.

Three exercises per week. 1st S.

2. Inorganic Chemistry.

A continuation of Course 1, but the time will be mainly spent on the metallic elements, their metallurgy, salts, etc.

Prerequisite—Chemistry 1. *Two exercises per week. 2d S.*

3. Elementary Physical Chemistry.

A short elementary course of ten lectures on the Dissociation Theory and its application; the Mass Law, etc. To accompany Chemistry 4.

Elective by special arrangement.

4. Qualitative Analysis.

Laboratory practice, with occasional lectures and recitations. The

student is expected to become proficient in the separation and detection of the common acids and bases and to keep a full set of notes. For Chemical Freshmen, Electrical and Mechanical Freshmen and Agricultural Sophomores. Elective for Arts and Science Sophomores and Juniors.

Prerequisite—Chemistry 1.

Freshman Year. First half of semester. 2d S.
Sophomore and Junior Years. 1st S.
Fifty-one exercises.

5. Qualitative Analysis.

A short advanced course for Chemical Sophomores on insoluble substances and the rarer elements, to precede Chemistry 9. First five weeks.

Twenty-five exercises. 1st S.

6. Organic Chemistry.

Lectures and recitations. A study of the chemistry of the carbon compounds. For Chemical Sophomores. Elective for Arts and Science students.

Prerequisites—Chemistry 1 and 2. Three exercises per week. 2d S.

7. Organic Chemistry.

A continuation of Course 6. For Chemical Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 6. Two exercises per week. 1st S.

8. Organic Chemical Laboratory.

The course consists mainly of laboratory practice in preparing and purifying organic compounds. Lectures and recitations will be held from time to time in connection with the practice.

For Chemical Juniors. Elective for Arts and Science students.

Prerequisites—Chemistry 6. Three exercises per week. 1st S.

9. Inorganic Preparations.

A brief course upon the preparation and purification of inorganic compounds, including their extraction from minerals.

Prerequisites—Chemistry 1 and 2. Sixteen exercises. 1st S.

10. Quantitative Analysis.

A preliminary course in quantitative analysis to familiarize the student with the general methods of chemical manipulation and analysis. For Chemical Sophomores. Elective in the Arts and Science Course in Sophomore, Junior and Senior years, provided laboratory facilities permit. Last twelve weeks.

Prerequisite—Chemistry 4. Five exercises per week. 1st S.

11. Quantitative Analysis.

A continuation of Chemistry 10. For Chemical Sophomores.

Five exercises per week. 2d S.

12. Advanced Quantitative Analysis.

Arranged for students of the Chemical Course, and intended to fit

them for work in the laboratories of agricultural experiment stations, fertilizer works, iron works, sugar refineries, etc., and for the duties of the public analyst. This course will be made to fit the end which each has in view, and will be largely an individual one. For those students desiring to specialize in agricultural and food chemistry the analysis made will tend in the main toward agricultural products, fertilizers, mucks, marls, manures, dairy products, waters, foodstuffs, sugars, etc. For the student wishing to enter metallurgical works, the analyses will be in the main upon iron and steel and other metals, ores, limestones, slags, alloys, fuels, etc. As a preparation for the study of medicine, work will be done on poisons, foods, drugs, urine, etc. Other lines will be arranged to meet the wants of the individual student. Each student will be given some practice in all of the branches of agricultural, metallurgical, medical, sanitary and industrial chemistry, in order to lay a foundation for any future work which may be required of him. A short course in gas and oil analysis will also be provided. For Chemical Juniors.

Prerequisite—Chemistry 11. *Four exercises per week. 1st S.*

13. Advanced Quantitative Analysis.

A continuation of Chemistry 12. For Chemical Juniors.

Four exercises per week. 2d S.

14. Industrial Chemistry.

Lectures on chemical manufactures, such as sugar, sodium carbonate, fertilizers, sulphuric acid, glass, matches, paints, dyes, soaps, illuminating gas, petroleum, etc. The lectures will be illustrated by lantern views, and trips to the leading New England cities to examine important chemical manufactures will be taken as far as practicable. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 1 and 2. *Two exercises per week. 2d S.*

15. Metallurgy.

Lectures describing the processes employed in the smelting of ores, of iron, lead, copper, zinc, silver, gold, etc., and the methods used in refining these metals. The lectures are illustrated by stereopticon and by specimens of metallurgical products. For Chemical Juniors or Seniors.

Prerequisites—Chemistry 1 and 2. *One exercise per week. 2d S.*

Chemistry 14 and 15 are given in alternate years with Chemistry 22.

16. Assaying.

A course in the fire assay of gold and silver ores. For Chemical Seniors.

Prerequisites—Chemistry 10 or 18. *Seventeen exercises. 1st S.*

17. Agricultural Analysis.

Arranged especially for students of the Agricultural Courses, and consists mainly of the quantitative determination of the constituents

of milk, butter, fertilizers, grain, etc. Elective, subject to desk room in laboratory.

Prerequisites—Chemistry 1, 2 and 4. *Three exercises per week.*

18. Metallurgical Analysis.

Arranged for the students of the Engineering Departments who may elect the same, and consists mainly of the quantitative determination of ores, slags, metals, alloys, fuels, etc. Elective, subject to desk room in the laboratory.

Prerequisites—Chemistry 1, 2 and 4 or 5. *Three exercises per week.*

21. Physical Chemistry, Lectures.

Advanced study of chemical theory. Practical experiments will be performed, with the aid of the student, in the determination of vapor density, molecular weights, specific heat, etc.; and the study of isomorphism, diffusion of gases, solutions, ionization, electrolysis, molecular and atomic volume, thermo chemistry, equilibrium, the phase rule, etc., will take up much of the time. For Chemical Juniors or Seniors. Elective for Arts and Science students.

Prerequisites—Chemistry 1 and 2. *Two exercises per week. 1st S.*

22. Physical and Electro Chemistry, Lectures.

A continuation of Chemistry 21. For Chemical Juniors or Seniors. Elective for Arts and Science students. *Three exercises per week. 2d S.*

23. Advanced Quantitative Laboratory.

Especially arranged for students of the Chemical Engineering Course. May merge at any time into 24 and will usually do so about the middle of the first semester. For Chemical Seniors.

Eight exercises per week. 1st S.

24. Thesis. (Chemical Research.)

The work of the last semester of the Chemical Engineering Course is given up to the special study of some selected subject in any branch of chemical science and the student is required to present a thesis showing him to be capable of independence of thought and manipulation. For Chemical Seniors. *Eight exercises per week. 2d S.*

25. Organic Chemistry.

A brief introductory course in organic chemistry specially arranged for Agricultural students. For Agricultural Sophmores. Elective for Arts and Science students.

Prerequisite—Chemistry 1. *One exercise per week. 2d S.*

26. Introduction to Agricultural Chemistry.

A course upon the elements used by plants and animals, their application in fertilizers, their occurrence in foodstuffs, and their value in feeding. For Agricultural Juniors.

Prerequisites—Chemistry 1 and 2. *Two exercises per week. 1st S.*

27. Advanced Inorganic Chemistry.

Advanced study of the elements and their compounds. For Chemical Seniors and Juniors. Elective for Arts and Science students.

Prerequisite—Chemistry 1 and 2. *Three exercises per week. 1st. S.*

28. Organic Analysis.

For Chemical Juniors. *One and one-half exercises per week. 2d S.*

29. Electro Analysis, etc.

For Chemical Juniors. *Two and one-half exercises per week. 2d S.*

DAIRYING.

PROF. RASMUSSEN, MR. WILSON.

1. Farm Dairying.

Dairying in its relation to other branches of agriculture and other industries; study of the composition of milk; the use of the Babcock test, and tests for determining acidity of milk; the use of the lactometer in detecting adulteration of milk; value and methods of keeping records of dairy cows; co-operation in dairying.

Three exercises per week. 2d S.

2. Buttermaking.

A study of the secretion, and of the chemical and physical properties of milk; different systems of creaming, and factors influencing efficiency of hand separators; pasteurization, cream ripening, commercial starters, churning, and machinery. *Three exercises per week. 1st S.*

3. Market Milk.

A study of the value of milk as a food; the production and handling of market milk, of certified and modified milk, and commercial milk inspection. Exercises will be given in the judging of milk and cream and scoring of dairy barns. *Three exercises per week. 2d S.*

4. Factory Management.

Lectures and recitations on the organization, location, construction and operation of factories; special problems connected with the manufacture of butter; dairy conditions in foreign countries; scoring of butter.

Prerequisite—Dairying 2. *Three exercises per week. 1st S.*

5. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Three exercises per week. 2d S.

6. Dairy Research.

A study of the work of the experiment stations and other dairy literature. *Two exercises per week. 2d S.*

7. Dairy Bacteriology.

A study of the most common bacteria in dairy products, and the application of bacteriological principles to dairy work.

Prerequisite—Botany 17. *Three exercises per week.*

8. Ice Cream Making.

A study of the making, handling and marketing of lacto, ices, and ice cream. *Two exercises per week. 2d S.*

*DRAWING.

PROF. PUTNAM, MR. LATON.

These courses are of an industrial nature and include both free-hand and mathematical branches of this subject.

1a. Industrial Drawing. Prof. Putnam, Mr. Laton.

Free-hand lettering; free-hand drawing; use of instruments; mathematical drawing; inking, tinting, tracing and blue-prints.

Systems of object drawing; orthographic projection; isometric drawing; mechanical perspective, shades and shadows. For Engineering Freshmen. *Two and one-half exercises per week. 1st S.*

1b. Industrial Drawing. Prof. Putnam, Mr. Laton.

Same as Course 1a. For Agricultural Freshmen. Elective for Arts and Science Freshmen. *Two exercises per week. 1st S.*

2. Descriptive Geometry. Prof. Putnam, Mr. Laton.

Recitations and drawing exercises in the solution of geometrical problems by orthographic projection. For Engineering Freshmen.

Prerequisites—Drawing 1a and Mathematics 2.

Two and one-half exercises per week. 2d S.

4. Design of Farm Buildings. Prof. Putnam.

This course consists of drawings of floor plans and framing details for farm buildings in preparation for the Rural Architectural Course of the Senior Year. Elective for Agricultural Juniors.

Prerequisite—Drawing 1b. *Two exercises per week. 1st S.*

5. Descriptive Geometry. Prof. Putnam, Mr. Laton.

Continuation of Drawing 2. Practical problems on bridge beams, rafters, piping, etc. For Electrical and Mechanical Sophomores.

Prerequisites—Drawing 1a and 2, and Mathematics 2.

Two exercises per week. 1st S.

8. Machine Drawing. Mr. Laton.

Working drawings of various machines and machine tools including steam boiler and engine details. For Electrical and Mechanical Sophomores.

Prerequisite—Drawing 5. *Two exercises per week. 2d S.*

16. Free-hand or Charcoal Drawing.

Elective for Arts and Science Freshmen. Last half of semester.

Four exercises per week. 2d S.

*Students are advised not to purchase drawing instruments or supplies before consultation with the drawing instructor.

17. Special Drawing.

Special drawing arranged to meet the needs of students electing the Normal Manual Training Course. Freshman year.

Two exercises per week. 2d S.

18. Special Drawing.

A continuation of Drawing 17. For Manual Training Sophomores.

Two exercises per week. 1st S.

19. Special Drawing.

A continuation of Drawing 18. *Two exercises per week. 2d S.*

20. Special Drawing.

A continuation of Drawing 19. For Manual Training Juniors.

Two exercises per week. 1st S.

21. Special Drawing.

A continuation of Drawing 20. *Two exercises per week. 2d S.*

ELECTRICAL ENGINEERING.

PROF. HEWITT, ASST. PROF. HITCHCOCK.

1. Dynamo Electric Machinery. Prof. Hewitt.

The course begins with a general study of both direct and alternating current dynamos and motors, including elementary theory, with a large number of practical problems to illustrate application of same. For Electrical and Mechanical Juniors.

Prerequisites—Physics 2 and Mathemetics 6.

Three exercises per week. 1st S.

2. Dynamo Electric Machinery. Prof. Hitchcock.

A continuation of Course 1. The theory of armature winding and construction; the general points of design; a study of various types of electrical machinery; laboratory methods of measurements; the various electrical quantities such as electromotive force, current, resistance, permeability of iron; the use of standard instruments; the laws of electrolysis; thermo-electric currents, etc. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. Three exercises per week. 2d S.

4. Electrical Laboratory. Prof. Hewitt, Prof. Hitchcock.

The measurement of resistances, inductances capacities; the permeabilities of samples of iron; the determination of the candle power of incandescent and arc lamps; the calibration of resistances; the measurement of power in alternating current circuits; alternator characteristics; the testing of synchronous and polyphase motors; transformers; power measurements by wattmeters and a general study of polyphase machinery. For Electrical and Mechanical Juniors.

Prerequisite—Electrical Engineering 1. Three exercises per week. 2d S.

6. Telegraph and Telephone. Prof. Hitchcock.

A careful study of the elementary electrical principles of telegraphy; the construction and connection of lines and repeaters; high speed

telegraphy; simple and multiplex telegraphy; submarine signalling; automatic devices, general electric signalling for purposes of alarms, railroads, etc., and wireless telegraphy; also lectures and recitations on the acoustic and electrical principles of telephony; the different forms of calling and receiving apparatus and accessories and simple circuits. The latter part of the course is devoted to the consideration of the more complex forms of circuits, exchange switchboards, transfer systems and the construction of overhead and underground systems. Elective for Electrical Juniors. *One exercise per week. 2d S.*

11. Electrical Engineering Practice. Prof. Hitchcock.

A study of the properties of periodic curves; the effects of self-induction and capacity, and a more detailed study of dynamos, motors, transformers and other electrical apparatus. For Electrical Seniors.

Prerequisite—Electrical Engineering 2. Four exercises per week. 1st S.

12. Electrical Engineering Practice. Prof. Hewitt.

A continuation and completion of Electrical Engineering 11. It takes up more advanced theory and general practice. It also includes a thorough study of High Tension Power Transmission and deals with the selection of apparatus for generating stations and the distributing systems. A study will be made of the proper combinations of apparatus to correctly represent standard theory and practice. The design of transmission lines and of distributing systems will be considered. The application of the theory will be brought out in lectures and established with a large number of practical problems. A careful study will be given to the various methods used for lightning protection. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. Four exercises per week. 2d S.

13. Electric Railways. Prof. Hitchcock.

In this course will be considered the principles which govern the application of electric motors to railway service, and the location of power and sub-stations as determined by economic questions. Following this will be given the practical points involved in the selection and operation of railway equipment including power and sub-station equipment, line and track, railway motors and car equipment, storage batteries, etc. The problem of utilizing electric energy in mining will also be considered. For Electrical Seniors.

Prerequisite—Electrical Engineering 2. Two exercises per week. 1st S.

15. Electrical Laboratory. Prof. Hewitt, Prof. Hitchcock.

A continuation of Course 4 covering a more advanced series of experiments. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Prerequisite—Electrical Engineering 4. Four exercises per week. 1st S.

16. Electrical Laboratory. Prof. Hewitt, Prof. Hitchcock.

A continuation of Course 15 and takes up experiments of a more

advanced nature. A written report will be required for which one additional credit hour will be given. For Electrical Seniors.

Prerequisite—Electrical Engineering 15.

Four exercises per week. 2d S.

18. Thesis. Prof. Hewitt, Prof. Hitchcock.

A deposit of fifteen dollars to cover any damage done to instruments, apparatus, etc., is required in this course. Any unexpended balance is refunded at the close of the college year. Where apparatus is constructed as a part of a thesis, it shall remain the property of the department. Optional with head of department. For Electrical Seniors.

Three exercises per week. 2d S.

19. Dynamo Electric Machinery. Prof. Hitchcock.

A continuation of Electrical Engineering 2, but arranged to meet the requirements of students in Mechanical Engineering. This course is not as advanced as Electrical Engineering 11, but covers the same subjects in a more elementary manner. For Mechanical Seniors.

Prerequisite—Electrical Engineering 2. Three exercises per week. 1st S.

20. Dynamo Electric Machinery. Prof. Hewitt.

A completion of Electrical Engineering 19. For Mechanical Seniors.

Prerequisite—Electrical Engineering 19. Two exercises per week. 2d S.

21. Industrial Electricity. Prof. Hewitt.

A careful study of the principles and methods employed in electrical measurements, such as resistance of wire and batteries, current measurement by ammeters and electrolysis, the use of electrical measuring instruments and a series of laboratory experiments specially arranged to meet the requirements of Chemical Engineers. A brief study will be made of the dynamo, motor, transformer, primary and secondary batteries, arc and incandescent lamps and the general principles of electrical distribution. Experiments in electrolysis, electrical furnaces, reduction of metals, etc., are provided. For Chemical Seniors.

Three exercises per week. 1st S.

22. Industrial Electricity. Prof. Hewitt.

A continuation of Electrical Engineering 21, but more advanced in nature. For Chemical Seniors.

Prerequisite—Electrical Engineering 21. Three exercises per week. 2d S.

23. Contracts and Specifications. Prof. Hewitt.

The laws and forms of engineering contracts; standard specifications for engineering materials and apparatus. For Mechanical Seniors. Elective for Electrical Seniors. *One exercise per week. 1st S.*

25. Design of Electrical Machinery. Prof. Hitchcock.

A study of the design of the more important electrical machines, including the calculation of the dimensions of the machine, both elec-

trical and mechanical, and the predetermination of its performance from the dimensions. For Electrical Seniors.

Prerequisite—Electrical Engineering 11. Three exercises per week. 2d S.

26. Illuminating Engineering. Prof. Hewitt.

A theoretical discussion of the principles of illumination and the application of these principles to concrete examples. For Electrical Seniors who do not take Electrical Engineering 18. Elective for other Electrical Seniors. *Three exercises per week. 2d S.*

27. Industrial Electricity. Prof. Hewitt, Prof. Hitchcock.

Arranged for and adapted to students taking the Normal Manual Training Course.

Open only to Seniors in the Normal Manual Training Course.

Three exercises per week. 1st S.

ENGLISH.

PROF. RICHARDS, PROF. SCOTT, MISS HODGKINS, MISS PETTEE.

1. English Composition and Rhetoric. Prof. Richards.

The theory of composition, theme writing, book reviews, and an introduction to the principles of literary criticism. Eight exercises will be devoted to library practice, under the direction of the college librarian. For all Freshmen. *Three exercises per week. 1st S.*

2. English Composition and Rhetoric. Prof. Richards.

A continuation of English 1.

Prerequisite—English 1. Three exercises per week. 2d S.

3. Advanced Composition and Criticism. Prof. Richards.

(a) Composition. The four forms of composition will be studied. There will also be extemporary and prepared themes written, based upon text-book assignments and outside reading.

(b) Criticism. The history of criticism will be studied briefly, and each student will have the writings of at least one novelist and one poet to read and criticize. Elective for Arts and Science Sophomores and Juniors.

Prerequisites—English 1 and 2. Three exercises per week. 1st S.

10. Argumentation. Prof. Richards.

The principles and forms of argumentative composition. Practice in oratorical argumentation. Elective for Arts and Science Sophomores and Juniors and for Chemical Seniors.

Three exercises per week. 2d S

***11. The English Novel.** Prof. Richards.

This historical development of the English novel. Considerable reading will be required in this course. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 1 and 2. Three exercises per week. 1st S.

* English 11 and 13 are given in alternate years. English 13 given in 1912–13.

12. The English Drama. 1585–1625. Prof. Richards.

Certain plays of Marlowe, Shakespeare, Jonson, Webster, Beaumont and Fletcher will be read and discussed in class. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 1 and 2. Three exercises per week. 2d S.

***13. Modern English Poetry.** Prof. Richards.

A critical study will be made of the poetry of Wordsworth, Tennyson and Browning, and considerable outside reading will be required. Elective for Arts and Science Juniors and Seniors.

Prerequisites—English 1 and 2. Three exercises per week. 1st S.

14. American Literature. Prof. Scott.

Lectures with an extensive course of reading. Elective for Arts and Science and Agricultural Seniors.

Three exercises per week. 2d S.

15. Introduction to English Literature. Prof. Richards.

Lectures, recitations and assigned readings covering the whole subject in chronological order from Bede to Burns. For Arts and Science Freshmen. *Two exercises per week. 2d S.*

FORESTRY.

PROF. FOSTER.

1. Principles of Forestry.

This course is intended to give the student a general knowledge of forestry; relation of forests to soil, moisture, light and climatic conditions; the important systems of treating woodlands practised in Europe and the United States; the habits of important economic timber trees and the character and uses of these woods; the preparation of forest maps and working plans, including rough estimates of standing timber and the rate of growth of different stands; the artificial regeneration of forests by seeding and planting; forest fires; the forest regions of the United States; the practice of forestry by the Government and States. For all Agricultural Juniors except those in the Forestry Course. Elective for other students, except those taking Forestry 3.

Three exercises per week. 1st S.

2. Dendrology.

A study of the habits, distribution and characteristics of the native trees and important introduced trees of the Northeastern States, in both summer and winter conditions, and with particular reference to the prominent and constant features which lead to ready identification; and a general study of the important timber trees of the United States, including the structure of their woods. For Forestry Juniors. Elective for other students. *Three exercises per week. 1st S.*

3. Silviculture.

A study of the life history of trees; the relation of the different species to light, moisture, soil, temperature and to each other in the forest;

reproduction of trees; form and character of stands; the origin and determination of forest types; relation of forests to streamflow; forest descriptions; the improvement of the forest through use and proper treatment; the various systems of cutting and reproducing forests by natural means as practised in Europe and the United States. Supplemented by frequent woods practice and demonstrations. For Forestry Juniors. Elective for other students, except those taking Forestry 1.

Four exercises per week. 1st S.

4. Silviculture.

The establishment of forests through artificial regeneration; value of different species; seed collecting; testing and storage; nursery work; direct seeding; planting; care of plantations; cost of establishing plantations. Supplemented by actual nursery and planting work. For Forestry Juniors. Elective for other students.

Three exercises per week. 2d S.

5. Forest Mensuration.

Methods of determining the contents and growth of individual trees and of whole forests by different units; use of log rules and the measurement of logs and felled trees; the measurement of standing trees; methods of timber estimating; study of growth in diameter; height, and volume; construction and use of volume and yield tables. This course calls for the use of forest instruments and actual practice in measuring trees and whole stands. For Forestry Juniors. Elective for other students. *Three exercises per week. 2d S.*

6. Forest Protection.

Consideration of practical measures for the protection of forests from fire, insects, fungous diseases, grazing, trespass, and destructive lumbering; and an examination of the federal and state laws relating to forest interests. For Forestry Seniors. Elective for other students.

Two exercises per week. 1st S.

7. Practice of Forestry.

Development and present status of forestry in different countries; the work of the federal government and its management of the national forests; state forest policies; the lumber industry in the United States; the application of forestry to different regions. For Forestry Seniors. Elective for other Students. *Three exercises per week. 1st S.*

8. Forest Management.

The economic principles underlying the management of forests; the calculation of present and future values of forest property based on productive power; financial considerations of forest management; taxation of forest land; preparation of working plans in Europe, India and the United States. Includes collateral reading, writing on forestry subjects and discussions. For Forestry Seniors.

Four exercises per week. 2d S.

FRENCH.

PROF. WHORISKEY, ASST. PROF. WHITMAN, MISS PETTEE.

1. Elementary French. Miss Pettee.

Essentials of French grammar and reading, with practice in speaking and writing French. Dictation. For Freshmen offering German for admission. *Three exercises per week. 1st S.*

2. Elementary French. Miss Pettee.

A continuation of French 1. Reading of modern French prose; translation from English into French of connected narrative. Dictation. For Freshmen offering German for admission.

Three exercises per week. 2d S.

3. French Prose. Prof. Whitman.

Reading and translation of French prose, composition, poems. Elective for Arts and Science Students.

Three exercises per week. 1st S.

4. French Prose, History and Travel. Prof. Whitman.

Reading and translation. Composition based on some book read in class. Elective for Arts and Science Students.

Three exercises per week. 2d S.

***5. French Prose of Nineteenth Century.** Prof. Whitman.

Selections from Hugo, Balzac, Sand, Dumas père, Daudet will be read. Sight reading. Elective for Arts and Science Students.

Three exercises per week. 1st S.

***6. French Prose of Nineteenth Century.** Prof. Whitman.

Continuation of French 5. Elective for Arts and Science Students.

Three exercises per week. 2d S.

***7. French Literature in the Seventeenth Century.**

Corneille, Racine, Molière, Bossuet, Mme. de Sevigné, La Fontaine. Elective for Arts and Science Students. *Three exercises per week. 1st S.*

***8. French Literature in the Seventeenth Century.**

A continuation of French 7. Elective for Arts and Science Students.

Three exercises per week. 2d S.

GEOLOGY.

PROF. JAMES, PROF. JACKSON.

1. Mineralogy.

A short course in blowpipe analysis, followed by laboratory practice in the determination and study of minerals, with special reference to their economic value. For Chemical Juniors. Elective for Agricultural and Arts and Science Juniors.

Prerequisites—Chemistry 1 and 2. Two exercises per week. 2d S.

2. Elementary Geology.

The elements of geology. Special attention is given to local geology

* French 5 and 6 are to be given in 1912–1913 and in alternate years with 7 and 8.

and excursions are made to various points of interest in the vicinity. For Agricultural Juniors. Elective for Arts and Science Juniors and Seniors. *Three exercises per week. 2d S.*

3. Historical Geology.

The development of the continents of the earth and the evolution and distribution of the animal and plant forms from the earliest times to the present. Recitations, lectures and laboratory work. Elective for Agricultural and Arts and Science Seniors.

Prerequisites—Zoölogy 1 and 2 and Geology 2.

Three exercises per week. 1st S.

GERMAN.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary German. Prof. Whoriskey, Prof. Whitman.

German Grammar. Declension of articles, nouns, adjectives and pronouns; verbs, weak and strong. Reading of simple stories; conversation; dictation. For Freshmen offering French for admission.

Three exercises per week. 1st S.

2. Elementary German. Prof. Whoriskey, Prof. Whitman.

A continuation of German 1. Verbs, modal auxiliaries, essentials of syntax. Composition; reading and translation; conversation; dictation. For Freshmen offering French for admission.

Three exercises per week. 2d S.

3. German Prose of the Nineteenth Century. Prof. Whoriskey.

Reading and translation. Composition based on some book read in class. For Chemical Engineering Sophomores. Elective for Agricultural and Arts and Science Sophomores.

Three exercises per week. 1st S.

4. German Prose. Prof. Whoriskey.

Continuation of German 3. Reading and translation. Composition. For Chemical Engineering Sophomores. Elective for Agricultural and Arts and Science Sophomores. *Three exercises per week. 2d S.*

†5. Goethe. Prof. Whoriskey.

His Life and Works. Elective for Arts and Science Students.

Three exercises per week. 1st S.

†6. Goethe. Prof. Whoriskey.

A continuation of German 5. Elective for Arts and Science Students.

Three exercises per week. 2d S.

†7. Schiller. Prof. Whoriskey.

Life and Works. Elective for Arts and Science Students.

Three exercises per week. 1st S.

†8. Schiller.

A continuation of German 7. Elective for Arts and Science Students.

Three exercises per week. 2d S.

† German 13 and 14 are to be given in 1913–1914. German 5 and 6 are to be given in 1914–1915 and German 7 and 8 are to be given in 1915–1916.

‡9. **German Composition and Conversation.** Prof. Whoriskey.
Elective for Arts and Science Students.
Three exercises per week. 1st S.

‡10. **German Composition and Conversation.** Prof. Whoriskey.
Elective for Arts and Science Students.
Three exercises per week. 2d S.

‡11. **German Compositon and Conversation.**
Elective for Arts and Science Students.
Three exercises per week. 1st S.

‡12. **German Composition and Conversation.**
Elective for Arts and Science Students.
Three exercises per week. 2d S.

†13. **Sudermann.** Prof. Whoriskey.
His Life and Principal Works. Elective for Arts and Science Students. *Three exercises per week. 1st S.*

†14. **Sudermann and His Contemporaries.**
Continuation of German 13. Elective for Arts and Science Students.
Three exercises per week. 2d S.

15. **Chemical Journals, Methods, Etc.**
A study of current chemical literature in the German language. Each student will be expected to prepare abstracts, reports, criticisms, etc., upon assigned articles. For Chemical Juniors.
Open to students who have begun Chemistry 11.
Two exercises per week. 1st S.

15a. **Chemical Journals.**
A continuation of German 15. For Chemical Juniors.
Two exercises per week. 2d S.

HISTORY.

PROF. SCOTT, ASSOC. PROF. SMITH.

In the courses in History an important place is given to historical reading carried on in the reference room. In some cases a considerable part of the work is written.

1. **History of Europe from 476 to 1492.**
Recitations and collateral reading. For Arts and Science Freshmen.
Three exercises per week. 1st S.

2. **History of Europe from 1492 to 1715.**
Recitations and collateral reading. For Arts and Science Freshmen.
Three exercises per week. 2d S.

‡ German 11 and 12 are to be given in 1913–1914 and in alternate years with German 9 and 10.

† German 13 and 14 are to be given in 1913–1914. German 5 and 6 are to be given in 1914–1915 and German 7 and 8 are to be given in 1915–1916.

3. History of Europe from 1715 to 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 1. *Three exercises per week. 1st S.*

4. History of Europe since 1815.
Recitations and collateral reading. Elective for Arts and Science Sophomores.
Prerequisite—History 2 or History 3. *Three exercises per week. 2d S.*

5. American History to 1789.
For Agricultural Seniors. Elective for Arts and Science Juniors.
Three exercises per week. 1st S.

6. Political and Constitutional History of the United States from 1789 to 1860.
For Agricultural Seniors. Elective for Arts and Science Juniors.
Three exercises per week. 2d S.

7. Political and Constitutional History of the United States since 1860.
Elective for Arts and Science Seniors.
Prerequisite—History 6. *Three exercises per week. 1st S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. LUMSDEN.

With the rapid development of agricultural education, the science of horticulture has become more clearly defined. Horticulture is subdivided into five classes, viz.: (1) Pomology, or Fruit Growing; (2) Olericulture, or Vegetable Gardening; (3) Floriculture, or Flower Growing; (4) Landscape Gardening; and (5) Nursery Practice.

1. Principles of Horticulture. Prof. Gourley.
An elementary course in the fundamentals of horticulture, emphasizing the sciences upon which horticulture rests and the scope and importance of its field. For Agricultural Freshmen.
Two exercises per week. 2d S.

2. Olericulture.
Lectures and recitations upon the culture, classification and identification of vegetables. The storing and marketing of vegetables are also considered. For Agricultural Sophomores.
Two exercises per week. 2d S.

3. Practical Pomology. Prof. Wolff.
Dealing with problems of fruit growing such as location, choice of site, kind and adaptability of soil for fruit growing, soil management, planting of orchards, pruning, sprays and spraying, thinning, harvesting and marketing. Lectures and laboratory work. For Agricultural Sophomores. *Three exercises per week. 2d S.*

4. Greenhouse Construction and Management. Mr. Lumsden.
Lectures, recitations and laboratory work. This course aims to

familiarize the student with modern methods of greenhouse work and the more important plants grown under glass. Soils, varieties, culture, marketing, enemies, etc., are studied. Each student is required to do practical work in propagating, potting, watering, ventilating, etc. A study is made of the history and development of different types of greenhouses, including methods of heating and general management. Required in Horticultural Course. Elective in other Agricultural Courses.

Two exercises per week. 1st S.

5. Landscape Gardening. Mr. Lumsden.

An elementary course in ornamental and landscape gardening with special reference to the beautifying of home surroundings. Required in Horticultural Course. Elective in other Agricultural Courses.

Two exercises per week. 1st S.

6. Vegetable Gardening under Glass. Mr. Lumsden.

A study of the methods of growing market vegetables in greenhouses. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors. *Two exercises per week. 2d S.*

7. Nursery Management. Prof. Wolff.

A study of the methods of propagation and the care of trees, shrubs and perennial plants in the nursery. Lectures, reference readings and practice. Required in Horticultural Course. Elective in other Agricultural Courses. *Three exercises per week. 2d S.*

8. Viticulture and Small Fruit Culture. Prof. Wolff.

A comprehensive study of the grape and small fruits such as the strawberry, raspberry, blackberry, currant and gooseberry. Each fruit is studied with reference to all the essential points such as history, classification, propagation, planting, pruning, enemies, diseases, picking and marketing. Required in Horticultural Course. Elective in other Agricultural Courses. *Two exercises per week. 1st S.*

9. Commercial Floriculture. Mr. Lumsden.

A study of the growing of cut flowers and decorative plants. Lectures and practical exercises in the greenhouse. Elective for Agricultural Seniors. *Three exercises per week. 1st S.*

10. Evolution and Improvement of Plants. Prof. Gourley.

The application of the principles of evolution to the improvement of plants. Variation, selection and heredity as applied to the problems of plant breeding in agricultural practice. Required in Horticultural and General Agricultural Courses. Elective in other Agricultural Courses.

Two exercises per week. 1st S.

11. Systematic Pomology and Commercial Orcharding. Prof. Wolff.

The first eight weeks of the semester are devoted to a study of the leading varieties of fruits and their adaptations, with special reference to New England conditions. During the remainder of the semester this

course deals with the management of commercial orchards, problems of marketing, packing, transportation and coöperation. Lectures, reference reading and laboratory work. Required in Horticultural Course.

Four exercises per week. 1st S.

12. Advanced Landscape Gardening. Mr. Lumsden.

A study of the principles and composition of landscape gardening as applied to public and private grounds. Lectures, reference readings and plans. Elective for Agricultural Seniors.

Prerequisite—Horticulture 5. *Two exercises per week. 2d S.*

13. Advanced Vegetable Gardening.

The management of commercial vegetable gardening establishments; rotation of crops; manures; markets, and special crops. Elective in Horticultural Course. *Two exercises per week. 2d S.*

14. Cold Storage and Horticultural Manufactures. Prof. Gourley.

A study of the methods and principles involved in the building and refrigeration of fruit storage houses and in the manufacture of fruit and vegetable products. The efficiency of various refrigerants and insulating systems is discussed in relation to cold storage. The processes of canning and evaporating fruits and vegetables, the manufacture and bottling of fruit juices, and the relation of moulds, yeasts and bacteria to these processes are taught. Lectures, asigned reading and laboratory work. Elective in Horticultural Course.

Two exercises per week. 2d S.

15. Horticulture Seminar. Prof. Gourley.

A review of the important horticultural literature and methods of investigational work. Required in Horticultural and General Agricultural Courses. Elective in other Agricultural courses.

One exercise per week. 1st S.

LATIN.

1. Livy (Book I). Prof. Whitman.

Elective for Arts and Science Freshmen. Open only to students who have offered Advanced Latin for entrance.

Three exercises per week. 1st S.

2. Horace (Odes and Epodes). Prof. Whitman.

A continuation of Latin 1. Elective for Arts and Science Sophomores. *Three exercises per week. 2d S.*

3. Terence (Andria and Phormio).

A continuation of Latin 2. Elective for Arts and Science Freshmen.

Three exercises per week. 1st S.

4. Tacitus (Annals).

Elective for Arts and Science Sophomores.

Three exercises per week. 2d S.

MACHINE DESIGN.

PROF. PUTNAM, MR. LATON.

1. Mechanism. Prof. Putnam.

The study of machine parts with respect to their forms, motions and modes of connection; the kinematics of fluids; the theory of the slide valve. For Electrical and Mechanical Sophomores.

Prerequisite—Mathematics 1. *Two exercises per week. 1st S.*

2. Elementary Machine Design.

The application of Course 1 to practical problems worked out in the drafting room. For Electrical and Mechanical Sophomores.

Prerequisite—Mathematics 1. *Two exercises per week. 1st S.*

3. Mechanism. Prof. Putnam.

A continuation of Machine Design 1. For Electrical and Mechanical Sophomores.

Prerequisites—Machine Design 1 and 2. *Two exercises per week. 2d S.*

5. Theoretical Mechanics.

Mechanics of materials. For Engineering Juniors.

Four exercises per week. 2d S.

MATHEMATICS.

PROF. PETTEE, ASSOC. PROF. MOORE, ASST. PROF. STECK.

1. Algebra Completed. Prof. Pettee, Prof. Moore, Prof. Steck.

For Engineering Freshmen. *Four exercises per week. 1st S.*

For all other Freshmen. *Three exercises per week. 1st S.*

2. Solid Geometry with Advanced Course. Prof. Steck.

For Engineering Freshmen entering without the subject. Elective for Agricultural and Arts and Science Freshmen.

Two exercises per week. 1st S.

3. Plane and Spherical Trignometry. Prof. Pettee, Prof. Moore, Prof. Steck.

For all Freshmen. *Three exercises per week. 2d S.*

4. Surveying. Prof. Pettee, Prof. Moore, Prof. Steck.

Recitations, field-work and plotting, including compass, transit, plane-table and level work. For Engineering and Agricultural Freshmen. Elective for Arts and Science Freshmen.

Four exercises per week, last half of semester. 2d S.

5. Analytical Geometry. Prof. Pettee, Prof. Moore, Prof. Steck.

For Engineering Sophomores. Elective for Arts and Science Sophomores. *Five exercises per week. 1st S.*

6. Differential and Integral Calculus. Prof. Pettee, Prof. Moore, Prof. Steck.

For Engineering Sophomores. Elective for Arts and Science Sophomores. *Five exercises per week. 2d S.*

7. Differential Equations. Prof. Steck.
Elective for Arts and Science Juniors. *Two exercises per week. 1st S.*

8. History and Review of Mathematics. Prof. Moore.
A course designed for students who intend to teach Mathematics. Elective for Arts and Science Seniors. *Two exercises per week. 1st S.*

9. Astronomy. Prof. Pettee.
Elective for Arts and Science Seniors. *Two exercises per week. 2d S.*

*MECHANICAL ENGINEERING.

PROF. CARDULLO, ASST. PROF. MCKONE.

2. Theoretical Mechanics. Prof. Cardullo.
Composition and resolution of forces, conditions of equilibrium, center of gravity with especial attention to plane surfaces, friction, the simple machines, laws of motion, constrained motion, impact, work and energy, and moment of inertia, particularly of plane surfaces. For Electrical and Mechanical Sophomores, and Chemical Juniors.
Mathematics 6 is required as a parallel course.
Three exercises per week. 2d S.

3. Theoretical Mechanics. Prof. Cardullo.
A continuation of Course 2. For Electrical and Mechanical Juniors and Chemical Seniors.
Prerequisite—Mechanical Engineering 2.
Two exercises per week. 1st S.

5. Design of Machine Elements. Prof. Cardullo.
Strength of materials, and the design and proportion of machine parts, such as beams, shafts, gears, belts, springs, fastenings, etc. For Electrical and Mechanical Juniors.
Mechanical Engineering 3 is required as a parallel course.
Three exercises per week. 1st S.

5a. Designing and Drawing. Prof. McKone.
The application of course 5 to practical problems, worked out on the drafting board. For Electrical and Mechanical Juniors.
Mechanical Engineering 5 is required as a parallel course.
Two exercises per week. 1st S.

6. Design of Machine Elements. Prof. Cardullo.
A continuation of course 5 for Electrical and Mechanical Juniors.
Prerequisite—Mechanical Engineering 5.
Given in 1914 and after. *Three exercises per week. 2d S.*

6a. Designing and Drawing. Prof. McKone.
A continuation of course 5a for Electrical and Mechanical Juniors.
Prerequisite—Mechanical Engineering. Two exercises per week. 1st S.
Given in 1914 and after.

*A fee of two and one-half dollars per semester will be charged to students taking Mechanical Engineering laboratory work, to cover damage and breakage, the balance to be returned at the end of the semester.

7. Thermodynamics. Prof. McKone.

A study of the thermodynamic properties of gases and vapors, and the phenomena of operation of thermodynamic engines; analysis of the causes of energy losses and methods of minimization; interpretation of indicator and temperature-entropy diagrams; study of steam engines and turbines, boilers, gas engines and producers, and refrigerating machinery. For Electrical and Mechanical Juniors and Chemical Seniors.

Prerequisite—Mathematics 6. *Three exercises per week. 1st S.*

8. Thermodynamics. Prof. McKone.

A continuation of course 7. For Electrical and Mechanical Juniors.

Three exercises per week. 2d S.

9. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A study of apparatus and methods of calibration used in engineering investigations; testing of iron, steel and wood; valve setting and indicator practice. For Electrical and Mechanical Juniors.

Machine Design 3 and Mechanical Engineering 7 are required as parallel courses. *Two exercises per week. 1st S.*

10. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A study of miscellaneous engineering materials and apparatus, and standard methods of testing; lubricants, cement, fuels, boilers, engines, pumps, power plant appliances and supplies, etc. For Electrical and Mechanical Juniors.

Prerequisite—Mechanical Engineering 9. Two exercises per week. 2d S.

11. Hydraulics. Prof. Cardullo.

A study of the principles and practice of hydraulic machinery and measurements. For Electrical and Mechanical Seniors.

Prerequisite—Machine Design 5. *Four exercises per week. 1st S.*

12. Materials of Engineering. Prof. McKone.

A study of the properties, commercial forms, methods of preparation and use of engineering materials. For Electrical and Mechanical Seniors. *Two exercises per week. 1st S.*

13. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A critical study and detailed analysis of the performance of engineering apparatus, particularly of steam and gas engines, hydraulic apparatus, etc. For Electrical and Mechanical Seniors. Three hours' credit is given for this course.

Prerequisite—Mechanical Engineering 10.

Two exercises per week. 1st S.

14. Mechanical Laboratory. Prof. Cardullo, Prof. McKone.

A continuation of Course 13. For Mechanical Seniors. Three hours' credit is given for this course.

Prerequisite—Mechanical Engineering 13.

Two exercises per week. 2d S.

15. Advanced Design. Prof. Cardullo, Prof. McKone.

A study of the design of shop machinery of all kinds, especially of machine tools and prime motors, of the design of power plants, manufacturing plants, and of processes of manufacturing. Two lectures and three drafting periods per week. For Mechanical Engineering Seniors. *Five exercises per week. 1st S.*

16. Advanced Design. Prof. Cardullo, Prof. McKone.

A continuation of Course 15. One lecture and three drafting periods per week. For Mechanical Engineering Seniors.

Four exercises per week. 2d S.

17. Manual Training. Prof. Cardullo.

A study of the purpose of manual training work, of the proper methods of teaching, and of the equipment of manual training schools. For Seniors in the Manual Training Course.

Two exercises per week. 2d S.

19. Economics of Engineering. Prof. Cardullo.

A discussion of the principles and practice of systems of shop organization and management, cost keeping, wage payment and methods of cost reduction; also a discussion of engineering finance, welfare work, labor conditions, factory laws, etc. For Electrical and Mechanical Seniors. *Three exercises per week. 2d S.*

METEOROLOGY.

PROF. PETTEE.

1. Meteorology.

Recitations and lectures on wind systems, precipitation, humidity, laws of storms and tornadoes and methods of prediction of atmospheric changes. For Agricultural Seniors. Elective for Arts and Science Seniors. *Two exercises per week. 1st S.*

*MILITARY SCIENCE AND TACTICS.

LIEUT. HUNT.

Unless excused by proper authority, all male students are required to complete three years' satisfactory work in Drill and two years' satisfactory work in theoretical Military Science.

Drill.

Drill includes practical instruction in the following subjects: Close and Extended Order Drills by Company and Battalion, Advance and Rear Guards, Outposts, Marches, Ceremonies, Battalion Review, Parades and Guard Mounting, Guard Duty, Calisthenics and Gymnastics, Rifle Practice, First Aid to the Injured.

1. Military Drill.

For Freshmen. *Two exercises per week. 1st S.*

*Students who are excused from Drill by competent authority are required to take additional work in some subject equivalent in hours to the military work from which they are excused.

2. Military Drill.
A continuation of Drill 1. For Freshmen.
Two exercises per week. 2d S.

3. Military Drill.
For Sophomores. *Two exercises per week. 1st S.*

4. Military Drill.
A continuation of Drill 3. For Sophomores.
Two exercises per week. 2d S.

5. Military Drill.
For Juniors. *Two exercises per week. 1st S.*

6. Military Drill.
A continuation of Drill 5. For Juniors.
Two exercises per week. 2d S.

7. Military Drill.
Elective for Seniors only. *Two exercises per week. 1st S.*

8. Military Drill.
A continuation of Drill 7. Elective for Seniors only.
Two exercises per week. 2d S.

Military Science.

Military Science includes theoretical instruction in the principles of the military profession and in the theory of the specific movements taught on the drill ground and in the field, the miiltary policy and history of the United States, the principles of military discipline and the administrative duties of military officers.

1. Infantry Drill Regulations.
Practical instruction and lectures. For Freshmen.
One exercise per week. 1st S.

2. Manual of Guard Duty and Small Arms Firing Regulations.
Practical instruction and lectures. For Freshmen.
Prerequisite—Military Science 1. One exercise per week. 2d S.

3. Field Service Regulations.
Lectures and discussions covering advance and rear guards, outposts, patrol, etc. For Sophomores.
Prerequisite—Military Science 2. One exercise per week. 1st S.

4. Field Service Regulations.
A continuation of Military Science 3. Practical field work. For Sophomores.
Prerequisite—Military Science 3. One exercise per week. 2d S.

5. Field Engineering and Hasty Intrenching.
Lectures and practical work.
Prerequisite—Military Science 4 and open only to students who are taking drill. One exercise per week. 1st S.

6. Military Map Reading and Sketching.

Theoretical and practical work. Elective for Juniors.

Prerequisite—Military Science 4 and open only to students who are taking drill. *One exercise per week. 2d S.*

7. Army Regulations, Organization and Administration.

Lectures and preparation of military papers. Elective for Seniors.

Prerequisite—Military Science 4 and open only to students who are taking drill. *One exercise per week. 1st S.*

8. Army Regulations, Organization and Administration.

A continuation of Military Science 7. Elective for Seniors.

Prerequisite—Military Science 7 and open only to students who are taking drill. *One exercise per week. 2d S.*

PHYSICS.

PROF. FISHER.

1. Mechanics and Heat.

Lectures illustrated by experiments and recitations on the properties of matter, with historical introduction to the more formal treatment. Mimeograph outlines are supplied at cost. For Engineering and Agricultural Sophomores. Elective for Arts and Science students.

Three exercises per week. 1st S.

1a. Electrical and Mechanical Engineering students have in addition recitations and problems. *Two exercises per week. 1st S.*

2. Electricity, Sound and Light.

A continuation of Physics 1. For Engineering and Agricultural Sophomores. Elective for Arts and Science students.

Prerequisite—Physics 1. *Three exercises per week. 2d S.*

2a. One additional exercise for Electrical Engineering and Mechanical Engineering students. *2d S.*

4. Physical Laboratory.

Laboratory work on the properties of matter, with discussions of the principles of making and reducing observations, and the theory of instruments employed; mechanics and heat. For Electrical and Mechanical Juniors. Elective for Arts and Science students.

Prerequisites—Physics 1 and 1a. Two laboratory periods and one recitation per week. *1st S.*

5. Physical Laboratory.

A continuation of Physics 4. Special attention give to Electricity. For Electrical and Mechanical Juniors. Elective for Arts and Science students.

Prerequisites—Physics 1, 1a, 2, 2a.

Two laboratory periods and one recitation per week. 2d S.

6. Physical Laboratory.

Similar to but more limited in scope than Physics 4. For Chemical Juniors.

Prerequisite—Physics 1.

One laboratory period and one recitation per week. 1st S.

7. Physical Laboratory.

A continuation of Physics 6. For Chemical Juniors.

Prerequisites—Physics 1, 2.

Two laboratory periods and one recitation per week. 2d S.

(A deposit of $5.00 is required of all students in courses 4, 5, 6, 7 to cover cost of notes. The unexpended balance is refunded at the end of the year. Damage to instruments and apparatus is charged for at the cost of repairs or replacement.)

8. Physical Laboratory.

For Agricultural Sophomores. A deposit of $2.00 is required for notes, balance refunded at close of course.

One laboratory period per week. 2d S.

PHYSICAL CULTURE.

Unless excused by proper authority, all women students are required to complete three years' work in Physical Culture.

1. Physical Culture.

A course in free-hand calisthenics, dumb bell and wand drills, apparatus work and gymnasium dancing adapted to the needs of women students. *One exercise per week. 1st S.*

2. Physical Culture.

A continuation of Physical Culture 1. *One exercise per week. 2d S.*

POLITICAL SCIENCE.

PROF. SCOTT, ASSOC. PROF. SMITH.

1. Political Economy.

An elementary course, with lectures upon some of the practical questions of the day. For Arts and Science Sophomores, Agricultural Juniors and Engineering Seniors. *Three exercises per week. 2d S.*

2. Laws of Business.

Recitations supplemented by lectures and the discussion of cases. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors. *Three exercises per week. 1st S.*

3. American Constitutional Law.

Recitations, supplemented by a study of the decisions of the United States Supreme Court. Special attention is given to the connections between American constitutions and American political history. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Three exercises per week. 2d S.

4. Money and Banking.

Recitations, readings and lectures. Elective for Agricultural Seniors and Arts and Science Juniors and Seniors.

Political Science 4 and 5 are given in alternate years. Political Science 4 will be offered in the year 1912–1913.

Prerequisite—Political Science 1. *Three exercises per week. 2d S.*

5. Public Finance.

Recitations, readings and lectures. Elective for Agricultural Seniors and Arts and Science Juniors and Seniors.

Political Science 4 and 5 are given in alternate years. Political Science 5 will be offered in the year 1913–1914.

Prerequisite—Political Science 1. *Three exercises per week. 2d S.*

6. Socialism.

A study of historical types of socialism; the economic theories of Karl Marx; the causes which lie back of the present socialist movement, together with its aims and propaganda. Text-book, readings, and lectures. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Prerequisite—Political Science 1. *Three exercises per week. 1st S.*

7. Commercial Geography.

A study of the commodities of commerce; the factors which influence their production; the regions of their production; markets and exchange facilities. Text-book with assigned readings. Elective for Arts and Science Freshmen and Sophomores. *Three exercises per week. 1st S.*

8. Agricultural Economics.

A consideration of the three factors of production, land, labor and capital, as related to agriculture. Among the other rural problems studied will be shifts in population, the income of the farmer, markets, speculation, and agricultural coöperation. Lectures, assigned readings and reports. Required for Agricultural Seniors. Elective for Arts and Science Seniors who have completed Political Science 1.

Three exercises per week. 1st S.

9. Labor Problems.

A study of such subjects as the growth of labor organizations; strikes and lockouts; the open and closed shop; and labor legislation. Recitations, readings, and lectures. Elective for Arts and Science Juniors and Seniors and Agricultural Seniors.

Prerequisite—Political Science 1. *Three exercises per week. 2d S.*

10. Economic Problems of the Home.

Lectures and assigned readings. Among the subjects studied will be the following: effect of modern industry upon industry of the home; economic and legal position of woman in the family and in society; laws regulating food supplies, the manufacture of clothing, and the structure and care of buildings; marketing problems. For Junior and Senior women. *Two exercises per week. 1st S.*

PSYCHOLOGY.

PROF. GROVES.

1. Introduction to Psychology.

An introduction to the study of mental life. Simple experiments are used to illustrate fundamental laws of the mind. The practical needs of the student are related as closely as possible to the work of the course. For Arts and Science Sophomores or Seniors. Elective for Agricultural Sophomores. *Three exercises per week. 1st S.*

2. Educational Psychology.

A study of the application of psychology to education and of the psychological development of the child-mind. Especial attention is given to the problem of interest, apperception, attention, and class-room management. Elective for Arts and Science students.

Prerequisite—Psychology 1. *Three exercises per week. 1st S.*

†3. Social Psychology.

A study of the development of the social instincts and of the characteristics of the social mind. Attention will be given to suggestibility, the crowd, mob-mind, fashion, conventionality, imitation, conflict, discussion, and public opinion. Elective for Arts and Science students.

Prerequisite—Psychology 1. *Three exercises per week. 2d S.*

†4. Advanced Psychology.

A continuation of Psychology 1. A detailed study will be made of some aspect of consciousness. Elective for Arts and Science students.

Prerequisite—Psychology 1. *Three exercises per week. 2d S.*

SHOP WORK.

PROF. CARDULLO, MR. PHILBRICK, MR. DONHAM.

1a. Wood Work. Mr. Philbrick.

Exercises in carpentry work, joinery and pattern making. For Engineering Freshmen. *Two and one-half exercises per week. 1st S.*

1b. Wood Work. Mr. Philbrick.

Same as Course 1a. Elective for Arts and Science Freshmen.

Two exercises per week. 1st S.

3. Forging. Mr. Donham.

Exercises in upsetting, drawing, forming and welding. For Electrical and Mechanical Sophomores. *Two exercises per week. 1st S.*

4. Machine Work. Mr. Donham.

A course in turning, facing, thread cutting, milling, shaping, scraping, filing and planing. For Electrical and Mechanical Sophomores.

Two and one-half exercises per week. 2d S.

9. General Machine Work. Mr. Donham.

A continuation of Shop Work 4. For Electrical and Mechanical Juniors. *One exercise per week. 1st S.*

†Psychology 3 and 4 are given in alternate years. Psychology 3 is offered in 1912–1913.

10. Manufacturing. Mr. Donham.

Construction and use of jigs and special fixtures; use of limit gauges, special tools, turret and screw machinery; manufacture of some simple machine, using special appliances. For Electrical Juniors. Elective for Mechanical Juniors. *One exercise per week. 2d S.*

13. Wood Work. Mr. Philbrick.

Same as Shop Work 1. For Agricultural Freshmen.

Two exercises per week, first half of semester. 2d S.

14. Forging. Mr. Donham.

For Agricultural Freshmen. *One exercise per week. 1st S.*

15. Machine Work. Mr. Donham.

Same as Shop Work 4. For Chemical Seniors.

Two exercises per week. 1st S.

16. Advanced Shop Work. Mr. Philbrick, Mr. Donham.

Foundry practice; advanced pattern making and advanced machine shop practice. For Mechanical Engineering Seniors.

Two exercises per week. 1st S.

17. Advanced Shop Work. Mr. Philbrick, Mr. Donham.

Continuation of Shop Work 16. For Mechanical Engineering Seniors.

Two exercises per week. 2d S.

20. Special Wood Work. Mr. Philbrick.

Wood work arranged to suit the needs of students taking the Normal Manual Training Course. For Manual Training Freshmen.

One exercise per week. 2d S.

21. Special Wood Work. Mr. Philbrick.

A continuation of Shop Work 20. For Manual Training Sophomores.

Two exercises per week. 1st S.

22. Special Wood Work. Mr. Philbrick.

A continuation of Shop Work 21. For Manual Training Sophomores.

Three exercises per week. 2d S.

23. Special Wood Work. Mr. Philbrick.

A continuation of Shop Work 22. For Manual Training Juniors.

Three exercises per week. 1st S.

24. Special Forge Shop. Mr. Donham.

Forge work adapted to the needs of students taking the Normal Manual Training Course. For Manual Training Juniors.

Three exercises per week. 2d S.

25. Special Machine Work. Mr. Donham.

Machine work arranged to meet the needs of students taking the Normal Manual Training Course. For Manual Taining Seniors.

Three exercises per week. 1st S.

26. Special Machine Work. Mr. Donham.

A continuation of Shop Work 25. For Manual Training Seniors.

Three exercises per week. 2d S.

SOCIOLOGY.

PROF. GROVES.

2. Primitive Society.

A study of primitive man and of human progress. The ethnical and sociological history of man, including the following subjects: mophological characters, conflict, races, race-mixing, play art, exploitation, marriage, totemism, savage religions, magic and primitive secret societies. Elective for Agricultural Sophomores and Arts and Science students. *Three exercises per week. 2d S.*

3. Social Pathology and Modern Philanthropy.

A study of modern sociological problems including crime, poverty, degeneration, divorce, prison reform, play ground movement, city housing and the work and organization of city settlements, public charities and philanthropic societies. Education is studied as the means of conscious progress. Elective for Arts and Science students and Chemical Seniors. *Three exercises per week. 2d S.*

4. Advanced Sociology.

A course in social theory given especially for students who are specializing in the social sciences. It aims to introduce the student to the standard sociological literature. Elective for Arts and Science students.

Prerequisite—Sociology 2. *Three exercises per week. 1st S.*

5. Mental Defectives.

A sociological study of abnormal mental life with special attention to the problem of social prophylaxis. A course designed for students who plan to engage in social or educational work of an administrative or institutional character. Elective for Arts and Science students.

Prerequisites—Psychology 1 and Sociology 2.

Two exercises per week. 2d S.

6. American Race Problems.

A seminar study of American social problems of racial origin with special attention to the negro problem. Elective for Arts and Science students.

Prerequisite—Sociology 2. *One exercise per week. 2d S.*

SPANISH.

PROF. WHORISKEY, ASST. PROF. WHITMAN.

1. Elementary Spanish. Prof. Whitman.

An elementary study of Spanish grammar, supplemented and followed by reading of easy Spanish texts, and conversation. Elective for Arts and Science Juniors. *Three exercises per week. 1st S.*

2. Elementary Spanish. Prof. Whitman.

Conversation, a thorough review of Spanish grammar, based on the texts studied in Spanish 1, and reading of more advanced Spanish texts. Elective for Arts and Science Juniors.

Prerequisite—Spanish 1. *Three exercises per week. 2d S.*

ZOÖLOGY.

PROF. JACKSON, PROF O'KANE.

The courses in Zoölogy are arranged in sequence for those studying Agriculture or Economic Entomology, and for those desiring a more general course fitting them for teaching or for medical studies, though any courses offered may be taken by those who have completed previous courses necessary.

1. Invertebrate Zoölogy.

The fundamental principles of life and the structure, habits and life history of the invertebrate animals. The economic aspect will be especially emphasized. Lectures and laboratory dissection of type forms. For Agricultural Freshmen. Elective for Arts and Science Freshmen and Sophomores. *Three exercises per week. 1st S.*

2. Vertebrate Zoölogy.

A continuation of Zoölogy 1, giving the structure, habits and life history of the vertebrate animals and their relation to man. The last part of the semester will be devoted to a brief study of the human body, and the fundamental principles of hygiene and sanitation. For Agricultural Freshmen. Elective for Arts and Science Freshmen and Sophomores.

Prerequisite—Zoölogy 1. *Three exercises per week. 2d S.*

3. Economic Entomology.

The more important insect pests of the garden, the orchard, field crops and domestic animals; their habits and life histories; means of control; the preparation and application of insecticides; efficiency of spray machinery and appliances. For Agricultural Juniors. Elective for Arts and Science Sophomores and Juniors.

Prerequisites—Zoölogy 1 and 2. *Three exercises per week. 1st S.*

4. Advanced Economic Entomology.

Special studies and reports on injurious insects; the literature and history of Economic Entomology, with particular reference to the experimental work and reports of state experiment stations and the national government. Elective for Agricultural Juniors, and for Arts and Science Sophomores and Juniors.

Prerequisites—Zoölogy 1, 2 and 3. *Three exercises per week. 2d S.*

5. Human Anatomy and Physiology.

A detailed study of the structure, physiology and histology of the human body. The various functions of the body will be discussed primarily with the view of furnishing a basis for the following course.

Prerequisites—Zoölogy 1 and 2. *Three exercises per week. 1st S.*

6. Hygiene and Sanitation.

A detailed study of the fundamental principles of hygiene and sanitation, together with a study of the principal human bacterial diseases, their method of infection and means of prevention.

Prerequisites—Zoölogy 1, 2 and 5. *Three exercises per week. 2d S.*

7. Economic Zoölogy.

This course will deal exclusively with the economic aspect of Zoölogy and will consist of conferences and lectures in addition to assigned work calculated to meet the needs of the individual student.

Prerequisites—Zoölogy 1 and 2. Three exercises per week. 1st S.

8. Evolution.

Lectures and laboratory work dealing with the theoretical side of the problems of evolution. The history of evolution and various theories of heredity, variation and selection will be discussed. For Agricultural Sophomores.

Prerequisites—Zoölogy 1 and 2. Three exercises per week. 2d S.

9. Faunal Zoölogy. (Invertebrates.)

A study of the habits, life history and identification of local invertebrate forms. The work will consist of field trips, lectures and laboratory practice in the identification of the material collected.

Prerequisites—Zoölogy 1 and 2. Three exercises per week. 1st S.

10. Faunal Zoölogy. (Vertebrates.)

A continuation of Zoölogy 9. A study of the habits, life history and identification of local vertebrate forms with special reference to birds and mammals.

Prerequisites—Zoölogy 1 and 2. Three exercises per week. 2d S.

11. Advanced Zoölogy.

Arranged to suit the individual needs of those who wish to specialize in Zoölogy.

Prerequisites—Zoölogy 1 and 2 and open only to students who have shown a proficiency in Zoölogy. Three or four exercises per week. 1st S.

12. Advanced Zoölogy.

A continuation of Zoölogy 11. *Three or four exercises per week. 2d S.*

13. Zoölogical Seminar.

Reports and discussions upon the current literature of Zoölogy. Also reports on special topics and observations.

Open only to students by permission of the head of the department.

One exercise per week. 1st S.

14. Zoölogical Seminar.

A continuation of Zoölogy 13. *One exercise per week. 2d S.*

FOUR-YEAR COURSES.

Attendance at Convocation is required of all students, and attendance at Military Drill is required of all male students, unless members of the senior class or unless excused on account of physical disability. Certificates of disability must be obtained of the physician designated by the college, and must be renewed annually.

Those who complete a regular four-year course or its equivalent will be recommended for the degree of Bachelor of Science.

A thesis upon some subject connected with the work of the course taken may be required of candidates for a degree by the head of the department concerned. The subject, together with a written approval of it by the head of the department, is to be sumitted to the president before the fifteenth day of December preceding graduation. The thesis is to be submitted to the head of the department concerned not later than the second Tuesday preceding commencement day. The thesis is to be completed in typewritten and bound form and be in the hands of the department within which it lies before the Tuesday preceding commencement day. The thesis is to be typewritten or printed upon standard thesis paper, eight and one-half by eleven inches, medium weight, and must be neatly bound in black cloth and gilt-lettered on first cover with title, name of author, degree sought and year of graduation. This bound copy is to be filed and left with the college librarian.

The regular work of the senior class, including the regular final examinations, is completed at 4 p. m. on the Tuesday of the week preceding commencement, and each member of the class may receive a statement of his standing at the office of the registrar at 2 p. m. on the following Thursday.

All deficiencies must be removed by 6 p. m. of the Saturday of the same week.

UNCLASSIFIED COURSE.

No course will be accepted as an equivalent of a regular four-year course which does not comply with all the following requirements:

1. The completion of all work common to the four-year courses.
2. The completion of one hundred and fifty-four credit hours.
3. The completion of all but ten or less credit hours in some one or the regular four-year courses.
4. Approval by the faculty not earlier than June first preceding the year of graduation.

COURSES OF STUDY AND SCHEDULE OF HOURS.

(For details, see Description of Studies.)

AGRICULTURAL DIVISION.

All Courses.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 1	Inorganic Chemistry	3
Drawing 1b	Industrial Drawing	2
English 1	English Composition and Rhetoric	3
French 1 or *German 1*	Elementary French / Elementary German	3

Mathematics 1	Algebra	3
Drill 1	Military Drill	1
Military Science 1	Infantry Drill Regulations	1
Shop Work 14	Forging	1
Zoölogy 1	Invertebrate Zoölogy	3

FRESHMAN YEAR, SECOND SEMESTER.

Chemistry 2	Inorganic Chemistry	2
English 2	English Composition and Rhetoric	3
French 2 or	Elementary French	3
German 2	Elementary German	
Horticulture 1	Principles of Horticulture	2
Mathematics 3	Trigonometry	3
Mathematics 4	Surveying (last half of semester)	2
Drill 2	Military Drill	1
Military Science 2	Manual of Guard Duty and Firing Regulations	1
Shop Work 13	Wood Work (first half of semester)	1
Zoölogy 2	Vertebrate Zoölogy	3

SOPHOMORE YEAR, FIRST SEMESTER.

Agronomy 1	Farm Crops	3
Animal Husb. 1	Types and Breeds of Live Stock	3
Botany 1	General Botany	3
Chemistry 4	Qualitative Analysis	3
†*German 3*	German Prose of the Nineteenth Century	3
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
†*Psychology 1*	Psychology	3
Physics 1	Mechanics and Heat	3

SOPHOMORE YEAR, SECOND SEMESTER.

Botany 2	General Botany	3
Chemistry 25	Organic Chemistry	1
Dairying 1	Farm Dairying	3
Horticulture 2	Olericulture	2
Horticulture 3	Practical Pomology	3
Drill 4	Military Drill	1
Military Science 4	Field Service Regulations	1
Physics 2	Light, Sound and Electricity	3
Physics 8	Physical Laboratory	1
Zoölogy 8	Evolution	3

†Students are required to elect either German 3 or Psychology 1.

ANIMAL HUSBANDRY AND DAIRY COURSE.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 8	Farm Equipment and Management	3
**Animal Husb. 4*	Veterinary Anatomy	3
**Animal Husb. 6*	Advanced Judging	2
†Botany 17	Bacteriology	3
Chemistry 26	Chemistry of Plant Nutrition	2
**Dairying 2*	Buttermaking	3
Drill 5	Military Drill	1
Forestry 1	Principles of Forestry	3
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Zoölogy 3	Economic Entomology	3
Elective	Not limited to subjects starred	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 2	Soil Physics	3
Animal Husb. 2	Animal Breeding	3
Animal Husb. 3	Feeds and Feeding	3
**Animal Husb. 8*	Animal Diseases	3
Dairying 3	Market Milk	3
**Dairying 5*	Cheese Making	3
Drill 6	Military Drill	1
Geology 2	Elementary Geology	3
**Military Science 6*	Military Maps and Sketching	1
Political Science 1	Political Economy	3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 5	Seminar and History of Agriculture	2
**Animal Husb. 5*	Poultry	2
Animal Husb. 7	Live Stock Management	2
**Animal Husb. 9*	Sheep Raising	3
**Dairying 4*	Factory Management	3
†Dairying 7	Dairy Bacteriology	3
History 5	American History	3
Meteorology 1	Elementary Meteorology	2
Political Science 9	Agricultural Economics	3
**Psychology 2*	Educational Psychology	3
Elective	Not limited to subjects starred	6

SENIOR YEAR, SECOND SEMESTER.

Agronomy 4	Manures and Fertilizers	2
**Animal Husb. 10*	Advanced Veterinary Science	3

†Students are required to elect either German 3 or Psychology 1.
*Elective.
†Botany 17 is a prerequisite of Dairying 7.
During the Junior and Senior years students will elect courses of instruction between Animal Husbandry and Dairying.

**Dairying 6*	Dairy Research	2
**Dairying 8*	Ice Cream Making	2
English 10	Argumentation	3
History 6	Constitutional History	3
**Sociology 2*	Elementary Sociology	3
Thesis		2
Elective	Not limited to subjects starred	8

FORESTY COURSE.

JUNIOR YEAR, FIRST SEMESTER.

Botany 15	Plant Physiology	3
Chemistry 26	Chemistry of Plant Nutrition	2
Drill 5	Military Drill	1
Forestry 2	Dendrology	3
Forestry 3	Silviculture	4
Horticulture 5	Landscape Gardening	2
**Military Science 5*	Field Engineering and Intrenching	1
Zoölogy 3	Economic Entomology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 2	Soil Physics	3
Botany 16	Histology	3
Drill 6	Military Drill	1
Forestry 4	Silviculture	3
Forestry 5	Forest Mensuration	3
Geology 4	Elementary Geology	3
**Military Science 6*	Military Maps and Sketching	1
Political Science 1	Political Economy	3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 5	Seminar and History of Agriculculture	2
Botany 19	Pathology	3
Forestry 6	Forest Protection	2
Forestry 7	Practice of Forestry	3
History 5	American History	3
Meteorology 1	Elementary Meteorology	2
Political Science 9	Agricultural Economics	3

SENIOR YEAR, SECOND SEMESTER.

Botany 18	Systematic Botany	3
English 10	Argumentation	3
Forestry 8	Forest Management	4

† Botany 17 is a prerequisite of Dairying 7.
* Elective.

History 6	American History	3
Thesis		2
Elective		3

HORTICULTURAL COURSE.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 8	Farm Equipment and Management	3
Botany 15	Plant Physiology	3
Chemistry 26	Chemistry of Plant Nutrition	2
Drill 5	Military Drill	1
Forestry 1	Principles of Forestry	3
Horticulture 4	Greenhouse Construction and Management	2
Horticulture 5	Landscape Gardening	2
Horticulture 8	Viticulture and Small Fruit Culture	2
**Military Science 5*	Field Engineering and Intrenching	1
Zoölogy 3	Economic Entomology	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 2	Soil Physics	3
Animal Husb. 3	Feeds and Feeding	3
Drill 6	Military Drill	1
Geology 2	Elementary Geology	3
Horticulture 7	Nursery Management	3
**Military Science 6*	Military Maps and Sketching	1
Political Science 1	Political Economy	3
Elective		3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 5	Seminar and History of Agriculture	2
Botany 19	Plant Pathology	3
History 5	American History	3
Horticulture 10	Evolution and Improvement of Cultivated Plants	2
Horticulture 11	Systematic Pomology and Commercial Orcharding	4
Horticulture 15	Horticultural Seminar	1
Meteorology 1	Elementary Meteorology	2
Political Science 9	Agricultural Economics	3

SENIOR YEAR, SECOND SEMESTER.

Agronomy 4	Fertilizers	2
Botany 18	Systematic Botany	3

*Elective.

English 10	Argumentation	3
History 6	American History	3
Thesis		2
Elective		3

GENERAL AGRICULTURAL COURSE.

JUNIOR YEAR, FIRST SEMESTER.

Agronomy 8	Farm Equipment and Management	3
**Animal Husb. 4*	Veterinary Anatomy	3
Botany 15	Plant Physiology	3
Chemistry 26	Chemistry of Plant Nutrition	2
**Dairying 2*	Buttermaking	3
**Drawing 4*	Design of Farm Buildings	2
Drill 5	Military Drill	1
Forestry 1	Principles of Forestry	3
**Horticulture 5*	Landscape Gardening	2
**Horticulture 8*	Small Fruit Culture	2
**Military Science 5*	Field Engineering and Hasty Intrenching	1
Zoölogy 3	Economic Entomology	3
Elective	Not limited to subjects starred	3

JUNIOR YEAR, SECOND SEMESTER.

Agronomy 2	Soil Physics	3
**Animal Husb. 2*	Animal Breeding	3
Animal Husb. 3	Feeds and Feeding	3
**Animal Husb. 8*	Animal Diseases	3
Dairying 3	Market Milk	3
**Dairying 5*	Cheese Making	3
Drill 6	Military Drill	1
**Forestry 5*	Forest Mensuration	3
Geology 2	Elementary Geology	3
**Horticulture 7*	Nursery Management	3
**Military Science 6*	Military Maps and Sketching	1
Political Science 1	Political Economy	3
Elective	Not limited to subjects starred	3

SENIOR YEAR, FIRST SEMESTER.

Agronomy 5	Seminar and History of Agriculture	2
History 5	American History	3
Horticulture 10	Evol. and Imp. of Plants	2
Meteorology 1	Elementary Meteorology	2
Political Science 9	Agricultural Economics	3
Elective		6

*Elective.

SENIOR YEAR, SECOND SEMESTER.

Agronomy 4	Fertilizers	2
English 10	Argumentation	3
History 6	Constitutional History	3
Thesis		2
Elective		8

ARTS AND SCIENCE DIVISION.

The requirements for graduation from the Arts and Science Division include (1) the completion of all required studies, (2) the completion of two years of science, (3) the completion of one hundred and forty-eight semester hours, of which forty are required for Freshman Year, and (4) the election of studies during the Sophomore, Junior and Senior Years according to the group system.

The group system requires that all Arts and Science Division students shall elect one *major* and two *minor* courses; the *major* to consist of twenty-four credit hours, exclusive of thesis, in one of the three groups, in addition to the required work; and the *minors* to consist of eighteen credit hours in each of the other two groups, in addition to the required work.

At the time of making elections for the Junior Year, a student in the Arts and Science Division must submit to the registrar for approval of the Course Committee the selection of studies to satisfy the major requirement.

Students in this course are required to maintain an average of at least eighteen hours per semester during their sophomore, junior and senior years.

Group I.

Languages and Literature:—English, French, German, Latin, Spanish

Group II.

Mathematics and Sciences:—Mathematics, Zoölogy, Drawing, Agriculture, Mechanical Engineering, Electrical Engineering, Chemistry, Botany, Physics, Geology, Meteorology.

Group III.

History; Social Science and Psychology:—History, Political Science, Sociology, Pedagogy and Psychology.

All Courses.

§FRESHMAN YEAR, FIRST SEMESTER.

**Chemistry 1*	Inorganic Chemistry	3
**Drawing 1b*	Industrial Drawing	2
English 1	English Composition and Rhetoric	3
French 1 or	Elementary French	3
German 1	Elementary German	

§ Forty hours required.
* Elective.

History 1	European History, 476–1492	3
**Latin 1*	Livy, Pliny	3
Mathematics 1	Algebra	3
**Mathematics 2*	Solid Geometry	2
Drill 1	Military Drill	1
Military Science 1	Infantry Drill Regulations	1
‡*Physical Culture 1*	Physical Culture	1
**Political Science 7*	Commercial Geography	3
**Shop Work 1b*	Wood Work	2
**Zoölogy 1*	Invertebrate Zoölogy	3

SECOND SEMESTER.

**Chemistry 2*	Inorganic Chemistry	2
**Drawing 16*	Free-Hand or Charcoal Drawing (last half of semester)	2
**Drawing 17*	Special Drawing	2
English 2	English Composition and Rhetoric	3
English 15	Introduction to English Literature	2
French 2 or *German 2*	Elementary French / Elementary German	3
History 2	European History, 1492–1715	3
**Latin 2*	Terence	3
Mathematics 3	Trigonometry	3
**Mathematics 4*	Surveying (last half of semester)	2
Drill 2	Military Drill	1
Military Science 2	Manual of Guard Duty and Firing Regulations	1
‡*Physical Culture 2*	Physical Culture	1
‖*Shop Work 20*	Wood Work	1
**Zoölogy 2*	Vertebrate Zoölogy	3

Normal Manual Training Course.—Students registering in this course must elect for Freshman Year, first semester, Chemistry 1, Drawing 1b, Mathematics 2, Shopwork 1b. For second semester, Chemistry 4, Drawing 17, Mathematics 4, and Shopwork 20. History 1 and 2 are not required until Junior Year.

§SOPHOMORE YEAR, FIRST SEMESTER.

**Botany 1*	General Botany	3
**Chemistry 4*	Qualitative Analysis	3
‖*Drawing 18*	Special Drawing	2

§ Thirty-six hours required.
* Elective.
‡ Women students are required to take Physical Culture 1 and 2 as equivalent to Drill.
‖ Manual Training Course.

**English 3*	Advanced English Composition and Criticism	3
**German 3*	German Prose of the Nineteenth Century	3
†**History 3*	European History, 1715–1815	3
**Latin 3*	Tacitus	3
**Mathematics 5*	Analytical Geometry	5
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
‡*Physical Culture 1*	Physical Culture	1
**Physics 1*	Mechanics and Heat	3
**Physics 1a*	Mechanics and Heat	2
**Political Science 7*	Commercial Geography	3
Psychology 1	Psychology	3
‖*Shop Work 21*	Special Wood Work	2
**Spanish 1*	Elementary Spanish	3
**Zoölogy 1*	Invertebrate Zoölogy	3
**Zoölogy 3*	Economic Entomology	3
**Zoölogy 5*	Economic Zoölogy	3

SECOND SEMESTER.

**Botany 2*	General Botany	3
**Chemistry 25*	Organic Chemistry	1
‖*Drawing 19*	Special Drawing	2
**English 10*	Argumentation	3
**German 4*	Scientific German	3
**History 4*	European History since 1815	3
**Latin 4*	Horace	3
**Mathematics 6*	Calculus	5
Drill 4	Military Drill	1
Military Science 4	Field Service Regulations	1
‡*Physical Culture 2*	Physical Culture	1
**Physics 2*	Light, Sound and Electricity	3
**Physics 2a*	Light, Sound, etc	1
Political Science 1	Political Economy	3
‖*Shop Work 22*	Special Wood work	3
**Spanish 2*	Elementary Spanish	3
**Zoölogy 2*	Vertebrate Zoölogy	3
**Zoölogy 4*	Advanced Entomology	3
**Zoölogy 6*	Economic Zoölogy	3

Normal Manual Training Course.—Students registering in this

‡ Women students are required to take Physical Culture 1 and 2 as equivalent to Drill.
* Elective.
‖ Manual Training Course.
† Students changing from other courses to the Arts and Science Course may take the required History in the Sophomore Year.

course must elect for Sophomore Year, first semester, Drawing 18, English 3, German 3, Physics 1, and Shop Work 21. For second semester, Drawing 19, German 4, Physics 2, and Shop Work 22.

§ JUNIOR YEAR, FIRST SEMESTER.

All elective, except Drill 5 and 6 and Physical Culture 1 and 2.

Botany 16	Plant Histology	3
Botany 17	Bacteriology	3
Botany 19	Plant Pathology	3
Chemistry 4	Qualitative Analysis	3
Drawing 20	Special Drawing	2
English 3	Advanced English Composition	3
English 11 or	English Novel	3
English 13	Modern English Poetry	
French 3	French Prose	3
History 5	American History to 1789	3
Mathematics 7	Differential Equations	2
Drill 5	Military Drill	1
Military Science 5	Field Service Regulations	1
Physical Culture 1	Physical Culture	1
Physics 4	Physical Laboratory	4
Political Science 2	Laws of Business	3
Political Science 6	Socialism	3
Psychology 2	Educational Psychology	3
Shop Work 23	Special Wood Work	3
Spanish 1	Elementary Spanish	3
Zoölogy 3	Economic Entomology	3
Zoölogy 9	Faunal Zoölogy	3

SECOND SEMESTER.

Botany 15	Plant Physiology	3
Botany 18	Systematic Botany	3
Chemistry 25	Organic Chemistry	1
Drawing 21	Special Drawing	2
English 10	Argumentation	3
English 12	English Drama	3
French 4	French Prose, History and Travel	3
Geology 1	Mineralogy	2
Geology 2	Elementary Geology	3
History 6	Const. and Political History of U. S. (1789–1866)	3
Drill 6	Military Drill	1

§ Thirty-six hours required.

Military Science 6	Military Map Reading and Sketching	1
Physical Culture 2	Physical Culture	1
Physics 5	Physical Laboratory	4
Political Science 3	American Constitutional Law	3
Political Science 4 or	Money and Banking	3
Political Science 5	Public Finance	
Psychology 3 or	Social Psychology	3
Psychology 4	Advanced Psychology	
Shop Work 24	Special Wood Work	3
Sociology 2	Primitive Society	3
Sociology 3	Social Pathology	3
Spanish 2	Elementary Spanish	3
Zoölogy 7	General Physiology	3
Zoölogy 8	Evolution	3
Zoölogy 10	Faunal Zoölogy	3

Normal Manual Training Course.—Students registering in this course must elect for Junior Year, first semester, Drawing 20, English 11 or English 13, History 1, Political Science 2, Psychology 2, and Shop Work 23. For second semester, Drawing 21, English 10, History 2, Shop Work 24, Sociology 2 and three additional hours.

§ SENIOR YEAR, FIRST SEMESTER.

All elective.

Botany 16	Plant Histology	3
Botany 17	Bacteriology	3
Botany 19	Plant Pathology	3
Chemistry 7	Physiological Chemistry	2
English 11 or	English Novel	3
English 13	Modern English Poetry	
French 5	French Prose of 19th Century	3
Geology 3	Historical Geology	3
German 9	German Composition	2
German 13	Sudermann	3
History 7	Const. and Political History of U. S. since 1860	3
Mathematics 8		2
Meteorology 1	Meteorology	2
Drill 7	Military Drill	1
Military Science 7	Army Regulations	1
Political Science 2	Laws of Business	3
Political Science 6	Socialism	3
Political Science 8	Agricultural Economics	3

Thirty-six hours required.

Psychology 1	Psychology	3
Psychology 2	Educational Psychology	3
Sociology 4	Advanced Sociology	3
Spanish 1	Elementary Spanish	3
Thesis		2
Zoölogy 11	Advanced Zoölogy	3 or 4
Zoölogy 13	Zoölogical Seminar	1

SECOND SEMESTER.

Botany 15	Plant Physiology	3
Botany 18	Systematic Botany	3
Botany 23	Advanced Botany	3
English 12	English Drama	3
English 14	American Literature	4
French 6	French Prose of 19th Century	3
Geology 2	Elementary Geology	3
German 10	German Composition	2
German 14	Sudermann and his Contemporaries	3
Mathematics 9	Astronomy	2
Drill 8	Military Drill	1
Military Science 8	Army Regulations	1
Political Science 3	American Constitutional Law	3
Political Science 4 or *Political Science 5*	Money and Banking / Public Finance	3
Political Science 9	Labor Problems	3
Psychology 3 or *Psychology 4*	Social Psychology / Advanced Psychology	3
Sociology 2	Primitive Society	3
Sociology 3	Social Pathology	3
Sociology 5	Mental Defectives	2
Sociology 6	American Race Problems	1
Spanish 2	Elementary Spanish	3
Thesis		1 or 2
Zoölogy 8	Evolution	3
Zöology 12	Advanced Zoölogy	3 or 4
Zoölogy 14	Zoölogical Seminar	1

Normal Manual Training Course.—Schedule for Senior Year will be especially arranged.

ENGINEERING DIVISION.

All Courses.

FRESHMAN YEAR, FIRST SEMESTER.

Chemistry 1	Inorganic Chemistry	3
Drawing 1a	Industrial Drawing	2½

English 1	English Composition and Rhetoric	3
French 1 or *German 1*	Elementary French or Elementary German	3
Mathematics 1	Algebra	4
‡*Mathematics 2*	Solid Geometry	2
Drill 1	Military Drill	1
Military Science 1	Infantry Drill and Regulations	1
Shop Work 1a	Wood Work	2½

SECOND SEMESTER.

Chemistry 2	Inorganic Chemistry	2
Chemistry 4	Qualitative Analysis (first half of semester)	3
Drawing 2	Descriptive Geometry	2½
English 2	English Composition and Rhetoric	3
French 2 or German 2	Elementary French or Elementary German	3
Mathematics 3	Trigonometry	3
Mathematics 4	Surveying (last half of semester)	2
Drill 2	Military Drill	1
Military Science 2	Manual of Guard Duty and Firing Regulations	1

Chemical Engineering Course.

SOPHOMORE YEAR, FIRST SEMESTER.

Chemistry 5	Qualitative Analysis (first five weeks)	1½
Chemistry 9	Inorganic Preparations	1
Chemistry 10	Quantitative Analysis (last twelve weeks)	4½
German 3	German Prose of the Nineteenth Century	3
Mathematics 5	Analytical Geometry	5
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
Physics 1	Mechanics and Heat	3

SECOND SEMESTER.

Chemistry 6	Organic Chemistry	3
Chemistry 11	Quantitative Analysis	5
German 4	Scientific German	3
Mathematics 6	Differential and Integral Calculus	5
Drill 4	Military Drill	1
Military Science 4	Field Service Regulations	1
Physics 2	Light, Sound and Electricity	3

‡For Freshmen entering without the subject.

JUNIOR YEAR, FIRST SEMESTER.

Chemistry 7	Physiological Chemistry	2
Chemistry 8	Organic Chemical Laboratory	3
Chemistry 12	Advanced Quantitative Analysis	4
Chemistry 21	Physical Chemistry	2
German 15	Chemical Journals	2
Drill 5	Military Drill	1
‡*Military Science 5*	Field Engineering and Hasty Intrenching	1
Physics 6	Physical Laboratory	2
Shop Work 15	Machine shop	2

SECOND SEMESTER.

Chemistry 13	Advanced Quantitative Analysis.	4
¶*Chemistry 14 and*	Industrial Chemistry	2
¶*Chemistry 15 or*	Metallurgy	1
¶*Chemistry 22*	Physical and Electro-chemistry	3
Geology 1	Mineralogy	2
German 15a	Chemical Journals	2
Machine Design 5	Theoretical Mechanics	4
Drill 6	Military Drill	1
‡*Military Science 6*	Military Map Reading and Sketching	1
Physics 7	Physical Laboratory	4

SENIOR YEAR, FIRST SEMESTER.

Chemistry 16	Assaying	1
¶*Chemistry 21*	Physical Chemistry	2
Chemistry 23	Chemical Research and Thesis	8
Elect. Engineering 21 and 27	Industrial Electricity	3
Mech. Engineering 7	Thermodynamics	3
‡*Drill 7*	Military Drill	1
‡*Military Science 7*	Army Regulations	1
Shop Work 15	Machine Shop	2

SECOND SEMESTER.

¶*Chemistry 14 and*	Industrial Chemistry	2
¶*Chemistry 15 or*	Metallurgy	1
¶*Chemistry 22*	Physical and Electro-chemistry	3
Chemistry 24	Thesis	8
Elect. Engineering 22	Industrial Engineering	3
**English 10 or*	Argumentation	3
Sociology 3	Social Pathology	
‡*Drill 8*	Military Drill	1
‡*Military Science 8*	Army Regulations	1
Political Science 1	Political Economy	3

¶Given in alternate years.
‡ Not a required subject.
* Chemical Seniors must elect either English 10 or Sociology 3.

Electrical and Mechanical Engineering Courses.

SOPHOMORE YEAR, FIRST SEMESTER.

Drawing 5	Descriptive Geometry	2
Mathematics 5	Analytical Geometry	5
Machine Design 1 and 2	Mechanism	4
Drill 3	Military Drill	1
Military Science 3	Field Service Regulations	1
Physics 1 and 1a	Mechanics and Heat	5
Shop Work 3	Forging	2

SECOND SEMESTER.

Drawing 8	Machine Drawing	2
Machine Design 3	Mechanism	2
Mathematics 6	Calculus	5
Mechanical Engineering 2	Theoretical Mechanics	3
Drill 4	Military Drill	1
Military Science 4	Field Service Regulations	1
Physics 2	Light, Sound and Electricity	4
Shop Work 4	Machine Work	2

Electrical and Mechanical Engineering Courses.

JUNIOR YEAR, FIRST SEMESTER.

Elect. Engineering 1	Dynamo Electric Machinery	3
Mech. Engineering 3	Theoretical Mechanics	2
Mech. Engineering 5 and 5a	Design of Machine Elements	5
Mech. Engineering 7	Thermodynamics	3
Mech. Engineering 9	Mechanical Laboratory	2
Drill 5	Military Drill	1
‡*Military Science 5*	Field Engineering and Hasty Intrenching	1
Physics 4	Physical Laboratory	2
Shop Work 9	General Machine Work	2

SECOND SEMESTER.

Elect. Engineering 2	Dynamo Electric Machinery	3
Elect. Engineering 4	Electrical Laboratory	3
§*Machine Design 5*	Theoretical Mechanics	4
Mech. Engineering 8	Thermodynamics	3
Mech. Engineering 10	Mechanical Laboratory	2
Drill 6	Military Drill	1
‡*Military Science 6*	Military Map Reading and Sketching	1
§*Physics 5*	Physical Laboratory	4
Shop Work 10	Manufacturing	2

§ After 1913 Mech. Eng. 6 and 6a, Design of Machine Elements, 5 hours, will replace Machine Design 5 and one hour of Physics 5.
‡ Not a required subject.

Electrical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Elect. Engineering 11	Electrical Engineering Practice	4
Elect. Engineering 13	Electric Railways	2
Elect. Engineering 15	Electrical Laboratory	4
‡*Elect. Engineering 23*	Contracts and Specifications	1
Mech. Engineering 11	Hydraulics	4
Mech. Engineering 12	Materials of Engineering	2
Mech. Engineering 13	Mechanical Laboratory	3
‡*Drill 7*	Military Science	1
‡*Military Science 7*	Army Regulations	1

SECOND SEMESTER.

Elect. Engineering 12	Elect. Engineering Practice	4
Elect. Engineering 16	Electrical Laboratory	4
**Elect. Engineering 18*	Thesis	3
Elect. Engineering 25	Design of Electrical Machinery	3
†*Elect. Engineering 26*	Illuminating Engineering	3
Mech. Engineering 19	Economics of Engineering	3
‡*Drill 8*	Military Drill	1
‡*Military Science 8*	Army Regulations	1
Political Science 1	Political Economy	3

Mechanical Engineering Course.

SENIOR YEAR, FIRST SEMESTER.

Elect. Engineering 19	Dynamo Electric Machinery	3
Elect. Engineering 23	Contracts and Specifications	1
Mech. Engineering 11	Hydraulics	4
Mech. Engineering 12	Materials of Engineering	2
Mech. Engineering 13	Mechanical Laboratory	3
Mech. Engineering 15	Advanced Design	5
Shop 16	Advanced Shop Work	2
‡*Drill 7*	Military Drill	1
‡*Military Science 7*	Army Regulations	1

SECOND SEMESTER.

Elect. Engineering 20	Dynamo Electric Machinery	3
Mech. Engineering 14	Mechanical Laboratory	3
Mech. Engineering 16	Advanced Design	4
Mech. Engineering 19	Economics of Engineering	3
‡*Drill 8*	Military Drill	1
‡*Military Science 8*	Army Regulations	1
Shop 7	Advanced Shop Work	2
Political Science 1	Political Economy	3
†*Sociology 3*	Social Pathology	3
**Thesis*		3

‡ Not a required subject. † Required of students not taking Thesis.
* Optional with head of department.

AGRICULTURAL DIVISION—FRESHMAN YEAR—ALL COURSES.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	English 1 (Div. 3) German 1 (Div. 4)		Chemistry 1	Drill 1	Drawing 1b
Tuesday	Zoölogy 1	English 1 (Div. 4) French 1 German 1 (Div. 3)	Mathematics 1 (Div. 3) Military Sci. 1 (Div. 4)	Mathematics 1 (Div. 4) Military Sci. 1 (Div. 3)	Drawing 1b
Wednesday	English 1 (Div. 3) German 1 (Div. 4)		Chemistry 1		Shop Work 14
Thursday	Zoölogy 1	English 1 (Div. 4) French 1 German 1 (Div. 3)	Mathematics 1 (Div. 3 & 4)	Mathematics 1 (Div. 3 & 4)	
Friday	English 1 (Div. 3) German 1 (Div. 4)		Chemistry 1.	Drill 1.	Zoölogy 1.
Saturday		English 1 (Div. 4). French 1 German 1 (Div. 3,).	Mathematics 1 (Div. 3 & 4)	Mathematics 1 (Div. 3 & 4)	

SECOND SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	English 2 (Div. 3) German 2 (Div. 4)		Chemistry 2	Drill 2	ShopWork 13 (First half of semester) Mathematics 4 (Last half of semester)
Tuesday	Zoölogy 2	(English 2 Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 4) (First half of semester) Military Sci. 2 (Div. 3)	Mathematics 3 (Div. 3) (First half of semester)	Shop Work 13 (First half of semester) Mathematics 4 (Last half of semester)
Wednesday	English 2 (Div. 3) German 2 (Div. 4)	Mathematics 3 (Div. 4) (First half of semester)	Horticulture 1	Mathematics 3 (Div. 3) (First half of semester)	Mathematics 4 (Last half of semester)
Thursday	Zoölogy 2	English 2 (Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 3 & 4)	Mathematics 3 (Div. 3 & 4)	Horticulture 1
Friday	English 2 (Div. 3) German 2 (Div. 4)	Military Sci. 2 (Div. 4)	Chemistry 2	Drill 2	Zoölogy 2 (First half of semester) Mathematics 4 (Last half of semester)
Saturday	Zoölogy 2 (Last half of semester)	English 2 (Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 4)	Mathematics 3 (Div. 3 & 4)	

All divisions will be made by the dean.

AGRICULTURAL DIVISION—SOPHOMORE YEAR—ALL COURSES.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	* Psychology 1	Military Science 3	Botany 1	Drill 3	Chemistry 4
	Tuesday	Agronomy 1	* Psychology 1	Physics 1	* German 3	Chemistry 4
	Wednesday	Animal Husbandry 1		Botany 1	Botany 1	Chemistry 4
	Thursday	Agronomy 1	* Psychology 1	Physics 1	* German 3	Animal Husbandry 1
	Friday	Animal Husbandry 1			Drill 3	Agronomy 1
	Saturday	Botany 1	Botany 1	Physics 1	* German 3	
SECOND SEMESTER	Monday	Dairying 1	Zoölogy 8	Botany 2	Drill 4	Horticulture 3
	Tuesday	Dairying 1	Zoölogy 8	Physics 2		Botany 2
	Wednesday	Physics 8	Physics 8	Physics 8		Botany 2
	Thursday		Zoölogy 8	Physics 2	Horticulture 2	Dairying 1
	Friday	Chemistry 25	Horticulture 3	Military Science 4	Drill 4	Horticulture 2
	Saturday		Horticulture 3	Physics 2		

* Elective

ANIMAL HUSBANDRY AND DAIRY COURSE—JUNIOR YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday		* Animal Husbandry 4	Zoölogy 3	Drill 5	Agronomy 8
Tuesday		* Dairying 2	Forestry 1	Agronomy 8	Botany 17
Wednesday		* Animal Husbandry 4	Zoölogy 3	Chemistry 26	* Animal Husbandry 6
Thursday	Botany 17	* Dairying 2	Forestry 1	Agronomy 8	Zoölogy 3
Friday	Botany 17	Botany 17	* Animal Husbandry 4	Drill 5	Forestry 1
Saturday	* Dairying 2	* Dairying 2	* Animal Husbandry 6 * Dairying 2	Chemistry 26 * Military Science 5	

SECOND SEMESTER

Monday		Agronomy 2	Geology 2	Drill	Dairying 3
Tuesday	Animal Husbandry 2	Political Science 1	* Animal Husbandry 8 * Dairying 5	Dairying 3	Agronomy 2
Wednesday		Agronomy 2	Animal Husbandry 3		* Animal Husbandry 8 * Dairying 5
Thursday	Animal Husbandry 2	Political Science 1	Animal Husbandry 3	Geology 2	Geology 2
Friday		Dairying 3	* Animal Husbandry 8 * Dairying 5	Drill	Animal Husbandry 3
Saturday	Animal Husbandry 2	Political Science 1		* Military Science 6	

* Elective.

ANIMAL HUSBANDRY AND DAIRY COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Political Science 8			* Dairying 4	* Animal Husbandry 9 * Dairying 7
	Tuesday	* Pyschology 2	* Animal Husbandry 9	History 5	Animal Husbandry 7	* Animal Husbandry 5 * Dairying 4
	Wednesday	Political Science 8	Meteorology 1	* Agronomy 7 * Dairying 7	* Animal Husbandry 9	Agronomy 5
	Thursday	* Psychology 2	* Animal Husbandry 5	History 5	* Dairying 4	* Agronomy 7 * Dairying 7
	Friday	Political Science 8	Meteorology 1	* Agronomy 7 * Dairying 7		Animal Husbandry 7
	Saturday	* Psychology 2	Agronomy 5	History 5		
SECOND SEMESTER	Monday		* Animal Husbandry 10	History 6		* Animal Husbandry 10
	Tuesday		* Sociology 2	English 10	Agronomy 4	* Dairying 8
	Wednesday			History 6	Agronomy 4	* Agronomy 3
	Thursday		* Sociology 2	English 10	* Agronomy 3	
	Friday		* Animal Husbandry 10	History 6		* Dairying 6
	Saturday		* Sociology 2	English 10	* Dairying 8	

* Elective.

FORESTRY COURSE—JUNIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Botany 15		Zoölogy 3	Drill 5	Forestry 2
	Tuesday	Botany 15	Botany 15	Forestry 3	Forestry 2	Horticulture 5
	Wednesday	Forestry 3	Forestry 3	Zoölogy 3	Chemistry 26	Botany 15
	Thursday	Horticulture 5	Horticulture 5	Forestry 3	Forestry 2	Zoölogy 3
	Friday	Forestry 3	Forestry 3	Forestry 3	Drill 5	
	Saturday				Chemistry 26 * Military Science 5	
SECOND SEMESTER	Monday		Agronomy 2	Geology 2	Drill 6	Botany 16
	Tuesday		Political Science 1	Forestry 5		Agronomy 2
	Wednesday	Botany 16	Agronomy 2	Forestry 4		Forestry 5
	Thursday		Political Science 1	Forestry 4	Geology 2	Geology 2
	Friday	Botany 16	Botany 16	Forestry 5	Drill 6	Forestry 4
	Saturday		Political Science 1		* Military Science 6	

* Elective.

FORESTRY COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER.	Monday	Political Science 8	* Horticulture 10	Forestry 7		Botany 19
	Tuesday	* Psychology 2	Forestry 6	History 5	Botany 19	Forestry 7
	Wednesday	Political Science 8	Meterology 1	* Agronomy 7	Forestry 7	Agronomy 5
	Thursday	* Psychology 2	* Horticulture 10	History 5		* Agronomy 7 Forestry 6
	Friday	Political Science 8	Meteorology 1	* Agronomy 7		Botany 19
	Saturday	* Psychology 2	Agronomy 5	History 5		
SECOND SEMESTER	Monday			History 6		Forestry 8
	Tuesday	Botany 18	* Sociology 2	English 10	* Agronomy 4	Forestry 8
	Wednesday		Forestry 8	History 6	* Agronomy 4	* Agronomy 3
	Thursday		* Sociology 2	English 10	* Agronomy 3	Botany 18
	Friday		Forestry 8	History 6		Botany 18
	Saturday		* Sociology 2	English 10		

* Elective.

HORTICULTURAL COURSE—JUNIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Botany 15	Horticulture 8	Zoölogy 3	Drill 5	Agronomy 8
	Tuesday	Botany 15	Botany 15	Forestry 1	Agronomy 8	Horticulture 5
	Wednesday		Horticulture 8	Zoölogy 3	Chemistry 26	Botany 15
	Thursday	Horticulture 5	Horticulture 5	Forestry 1	Agronomy 8	Zoölogy 3
	Friday	Horticulture 4	Horticulture 4	Horticulture 4	Drill 5	Forestry 1
	Saturday		Horticulture 4		Chemistry 26 * Military Science 5	
SECOND SEMESTER	Monday		Agronomy 2	Geology 2	Drill 6	* Botany 16
	Tuesday		Political Science 1	Horticulture 7		Agronomy 2
	Wednesday	* Botany 16	Agronomy 2	Animal Husbandry 3		Horticulture 7
	Thursday		Political Science 1	Animal Husbandry 3	Geology 2	Geology 2
	Friday	* Botany 16	* Botany 16	Horticulture 7	Drill 6	Animal Husbandry 3
	Saturday		Political Science 1		* Military Science 6	

* Elective.

HORTICULTURAL COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Political Science 8	Horticulture 10	Horticulture 11		Botany 19
	Tuesday	* Psychology 2		History 5	Botany 19	Horticulture 15
	Wednesday	Political Science 8	Meteorology 1	Horticulture 11	* Horticulture 9	Agronomy 5 * Horticulture 9
	Thursday	* Psychology 2	Horticulture 10	History 5	* Horticulture 9	Horticulture 11
	Friday	Political Science 8	Meteorology 1	Horticulture 11		Botany 19
	Saturday	* Psychology 2	Agronomy 5	History 5		
SECOND SEMESTER	Monday			History 6		* Horticulture 12 * Horticulture 13
	Tuesday	Botany 18	* Sociology 2	English 10	Agronomy 4	* Horticulture 12 * Horticulture 14
	Wednesday		* Horticulture 13	History 6	Agronomy 4	* Agronomy 3
	Thursday		* Sociology 2	English 10	* Agronomy 3	Botany 18
	Friday		* Horticulture 14	History 6		Botany 18
	Saturday		* Sociology 2	English 10		

* Elective.

GENERAL AGRICULTURAL COURSE—JUNIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Botany 15	*Animal Husbandry 4 *Horticulture 8	Zoölogy 3	Drill 5	Agronomy 8
	Tuesday	Botany 15	Botany 15	Forestry 1	Agronomy 8	* Drawing 4 * Horticulture 5
	Wednesday		* Animal Husbandry 4 * Horticulture 8	Zoölogy 3	Chemistry 26	Botany 15
	Thursday	* Drawing 4 * Horticulture 5	* Drawing 4 * Horticulture 5	Forestry 1	Agronomy 8	Zoölogy 3
	Friday	* Horticulture 4	* Horticulture 4	* Animal Husbandry 4	Drill 5	Forestry 1
	Saturday		* Horticulture 4		Chemistry 26 * Military Science 5	
SECOND SEMESTER	Monday		Agronomy 2	Geology 2	Drill 6	Dairying 3
	Tuesday	* Animal Husbandry 2	Political Science 1	* Animal Husbandry 8 * Dairying 5 * Forestry 5	Dairying 3	Agronomy 2
	Wednesday		Agronomy 2	Animal Husbandry 3		* Animal Husbandry 8 * Dairying 5 * Forestry 5
	Thursday	* Animal Husbandry 2	Political Science 1	Animal Husbandry 3	Geology 2	Geology 2
	Friday		Dairying 3	* Animal Husbandry 8 * Dairying 5 * Forestry 5	Drill 6	Animal Husbandry 3
	Saturday	* Animal Husbandry 2	Political Science 1		* Military Science 6	

* Elective.

GENERAL AGRICULTURAL COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Political Science 8	Horticulture 10	* Horticulture 11		* Animal Husbandry 9 *Forestry 2
	Tuesday	* Psychology 2	* Animal Husbandry 9	History 5	* Animal Husbandry 7 * Forestry 2	*Horticulture 15
	Wednesday	Political Science 8	Meteorology 1	* Agronomy 7 * Horticulture 11	* Animal Husbandry 9	Agronomy 5
	Thursday	* Psychology 2	Horticulture 10	History 5	* Forestry 2	* Agronomy 7 * Horticulture 11
	Friday	Political Science 8	Meteorology 1	* Agronomy 7 * Horticulture 11		* Animal Husbandry 7
	Saturday	* Psychology 2	Agronomy 5	History 5		
SECOND SEMESTER	Monday		* Animal Husbandry 10	History 6		* Animal Husbandry 10
	Tuesday	* Botany 18	* Sociology 2	English 10	Agronomy 4	* Horticulture 14
	Wednesday			History 6	Agronomy 4	* Agronomy 3
	Thursday		* Sociology 2	English 10	* Agronomy 3	* Botany 18
	Friday		* Animal Husbandry 10 * Horticulture 14	History 6		* Botany 18 * Dairying 6
	Saturday		* Sociology 2	English 10		

* Elective.

ARTS AND SCIENCE DIVISION—FRESHMAN YEAR.

	Day	8–9	9–10	10–11	11–12	1.30–2.30	3–4
FIRST SEMESTER	M.	English 1 (Div. 3) German 1 (Div. 4)	History 1 (Div. 4)	* Chemistry 1	Drill 1 Physical Culture 1	* Drawing 1b	* Drawing 1b * Latin 1
	T.	* Political Science 7 * Zoölogy 1	English 1 (Div. 4) French 1 German 1 (Div. 3)	Mathematics 1 (Div. 3) Military Science 1 (Div. 4)	History 1 (Div. 4)	* Drawing 1b	* Drawing 1b * Latin 1
	W.	English 1 (Div. 3) German 1 (Div. 4)	History 1 (Div. 3)	* Chemistry 1	Mathematics 1 (Div. 4) Military Science 1 (Div. 3)	* Shop 1b	* Latin 1 * Shop 1b
	T.	* Political Science 7 *Zoölogy 1	English 1 (Div. 4) French 1 German 1 (Div. 3)	Mathematics 1 (Div. 3 & 4)	Mathematics 1 (Div. 3 & 4)	History 1 (Div. 3 & 4)	History 1 (Div. 3 & 4)
	F.	English 1 (Div. 3) German 1 (Div. 4)	History 1 (Div. 3)	* Chemistry 1	Drill 1 Physical Culture 1	* Shop 1b * Zoölogy 1	* Shop 1b * Zoölogy 1
	S.	* Political Science 7	English 1 (Div. 4) French 1 German 1 (Div. 3)	Mathematics 1 (Div. 3 & 4)	Mathematics 1 (Div. 3 & 4)		
SECOND SEMESTER	M.	English 2 (Div. 3) German 2 (Div. 4)	English 15	* Chemistry 2	Drill 2 Physical Culture 2	* Drawing 16 (Last half of semester) * Mathematics 4 (Last half of semester)	* Drawing 16 (Last half of semester) * Latin 2 * Mathematics 4 (Last half of semester)
	T.	* Zoölogy 2	English 2 (Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 4) (First half of semester) Military Science 2 (Div. 3)	History 2 (Div. 4) Mathematics 3 (Div. 3) (First half of semester)	* Drawing 16 (Last half of semester) * Mathematics 4 (Last half of semester)	* Drawing 16 (Last half of semester) * Latin 2 * Mathematics 4 (Last half of semester)
	W.	English 2 (Div. 3) German 2 (Div. 4)	History 2 (Div. 3) Mathematics 3 (Div. 4) (First half of semester)	English 15	History 2 (Div. 4) Mathematics 3 (Div. 3) (First half of semester)	* Drawing 16 (Last half of semester) * Mathematics 4 (Last half of semester)	* Drawing 16 (Last half of semester) * Latin 2 * Mathematics 4 (Last half of semester)
	T.	* Zoölogy 2	English 2 (Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 3 & 4)	Mathematics 3 (Div. 3 & 4)	History 2 (Div. 3 & 4)	History 2 (Div. 3 & 4)
	F.	English 2 (Div. 3) German 2 (Div. 4)	History 2 (Div. 3) Military Sci. 2 (Div. 4)	* Chemistry 2	Drill 2 Physical Culture 2	* Drawing 16 (Last half of semester) * Mathematics 4 (Last half of semester) * Zoölogy 2 (First half of semester)	* Drawing 16 (Last half of semester) * Mathematics 4 (Last half of semester) * Zoölogy 2 (First half of semester)
	S.	Zoölogy 2 (Last half of semester)	English 2 (Div. 4) French 2 German 2 (Div. 3)	Mathematics 3 (Div. 3 & 4)	Mathematics 3 (Div. 3 & 4)		

All divisions will be made by the dean. * Elective.

	Day	8–9	9–10	10–11	11–12	1.30–2.30	3–4
FIRST SEMESTER.	M.	Psychology 1 (Div. 1)	Military Science 3	* Botany 1 * Zoölogy 3	Drill 3 Physical Culture 1	* Chemistry 4 * Spanish 1	* Chemistry 4 * English 3 * Latin 1
	T.	* Mathematics 5 * Political Science 7	Psychology 1 (Div. 1)	* Physics 1	* German 3 Psychology 1 (Div. 2)	* Chemistry 4 * Spanish 1	* Chemistry 4 * English 3 * Latin 1
	W.	* Latin 3 * Mathematics 5	* History 3 * Physics 1a	* Botany 1 * Zoölogy 3	* Botany 1	* Chemistry 4 * Spanish 1	* Chemistry 4 * English 3 * Latin 1
	T.	* Latin 3 * Mathematics 5 * Political Science 7	Psychology 1 (Div. 1)	* Physics 1	* German 3 Psychology 1 (Div. 2)	* Zoölogy 3	* History 3 * Zoölogy 3
	F.	* Latin 3 * Mathematics 5	* History 3 * Physics 1a		Drill 3 Physical Culture 1		
	S.	* Botany 1 * Mathematics 5 * Political Science 7	* Botany 1 * Mathematics 5	* Physics 1	* German 3 Psychology 1 (Div. 2)		
SECOND SEMESTER	M.	* Chemistry 25 * Latin 4		* Botany 2	Drill 4 Physical Culture 2	* Spanish 2	* Latin 2
	T.	* Mathematics 6	Political Science 1	* English 10 * Physics 2	* German 4	* Botany 2 * Spanish 2	* Botany 2 * Latin 2
	W.	* Latin 4 * Mathematics 6	* History 4	* Botany 2		* Botany 2 * Spanish 2	* Botany 2 * Latin 2
	T.	* Mathematics 6	Political Science 1	* English 6 * Physics 2	* German 4		* History 4
	F.	* Latin 4 * Mathematics 6	* History 4	Military Science 4	Drill 4 Physical Culture 2		
	S.	* Mathematics 6	Political Science 1	* English 10 * Physics 2	* German 4		

* Elective.

ARTS AND SCIENCE COURSE—JUNIOR YEAR.

	Day	8–9	9–10	10–11	11–12	1.30–2.30	3–4
FIRST SEMESTER	M.	Botany 19 Political Science 8	French 3	Political Science 6 Zoölogy 3	Drill 5 Physical Culture 1	Chemistry 4 Physics 4 Political Science 10 Spanish 1	Chemistry 4 English 3 Physics 4
	T.	Botany 19 Physics 4 Psychology 2	Botany 19 Political Science 2	History 5	English 11 or 13	Botany 17 Chemistry 4 Physics 4 Spanish 1	Botany 17 Chemistry 4 English 3
	W.	Physics 4 Political Science 8	French 3	Political Science 6 Zoölogy 3	Chemistry 7	Botany 19 Chemistry 4 Spanish 1	Botany 19 Chemistry 4 English 3
	T.	Botany 17 Psychology 2	Political Science 2	History 5	English 11 or 13	Zoölogy 3	Zoölogy 3
	F.	Botany 17 Political Science 8	French 3	Political Science 6	Drill 5 Physical Culture 1	Political Science 10	
	S.	Psychology 2	Political Science 2	Chemistry 7 History 5	English 11 or 13 Military Science 5		
SECOND SEMESTER	M.	Chemistry 25 Geology 1 Psychology 3 or Psychology 4	French 4 Geology 1 Zoölogy 8	Geology 2 History 6	Drill 6 Physical Culture 2	Botany 18 Spanish 2	Botany 18
	T.	Botany 5	Sociology 2 Zoölogy 8	English 10	Political Science 4 or Political Science 5	Spanish 2	English 12
	W.	Botany 18 Psychology 3 or Psychology 4	French 4	History 6	English 12 Physics 5	Physics 5 Spanish 2	Physics 5
	T.		Sociology 2 Zoölogy 8	English 10	Geology 2 Political Science 4 or Political Science 5	Botany 15 Geology 2 Physics 5	Botany 15 English 12 Geology 2 Physics 5
	F.	Botany 18 Geology 1 Psychology 3 or Psychology 4	Botany 18 French 4 Geology 1	History 6	Drill 6 Physical Culture 2	Botany 15 Physics 5	Botany 15 Physics 5
	S.		Sociology 2	English 10	Military Science 6 Political Science 4 or Political Science 5		

For hours of courses not scheduled see instructor.
All elective except Drill and Physical Culture.

ARTS AND SCIENCE COURSE—SENIOR YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	1.30–2.30	3–4
M.	Political Science 8	Sociology 4	French 5 Political Science 6	Drill 7	Botany 16 History 7 Political Science 10	Botany 16
T.	Psychology 2	Mathematics 8 Political Science 2	German 7 or 13	Botany 16 English 11 or 13	Botany 17 German 9	Botany 17
W.	Political Science 8	Meteorology 1 Sociology 4	French 5 Political Science 6	History 7	German 9	
T.	Botany 17 Psychology 2	Political Science 2	German 7 or 13	English 11 or 13	German 9 Mathematics 8	
F.	Political Science 8	Botany 17 Meteorology 1 Sociology 4	French 5 Political Science 6	Drill 7	Botany 16 History 7 Political Science 10	Botany 16
S.	Psychology 2	Political Science 2	German 7 or 13	English 11 or 13		

SECOND SEMESTER

M.	Political Science 9 Psychology 3 or Psychology 4	Mathematics 9 Sociology 5	French 6 Geology 2	Drill 8	Botany 18 German 10	Botany 18
T.	English 14	Political Science 3	German 8 or 14 Sociology 3	Political Science 4 or Political Science 5	English 12 German 10	
W.	Botany 18 Political Science 9 Psychology 3 or Psychology 4	Mathematics 9	French 6 Sociology 5	English 12	English 14	
T.	English 14	Political Science 3	German 8 or 14 Sociology 3	Geology 2 Political Science 4 or Political Science 5	Geology 2	English 12
F.	Botany 18 Political Science 9 Psychology 3 or Psychology 4	Botany 18	French 6 Sociology 6	Drill 8	German 10	
S.	English 14	Political Science 3	German 8 or 14 Sociology 3	Political Science 4 or Political Science 5		

For hours of courses not scheduled see instructor.
All elective.

ENGINEERING DIVISION—FRESHMAN YEAR—ALL COURSES.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	Mathematics 1 (Div. 2) English 1 (Div. 2) German 1 (Div. 1)	English 1 (Div. 1) French 1 German 1 (Div. 2)	Chemistry 1	Drill 1	Drawing 1a (Div. 2) Shop Work 1a (Div. 1)
Tuesday			Mathematics 1 (Div. 2)	Mathematics 1 (Div. 1) Military Science 1 (Div. 2)	Drawing 1a (Div. 2) Shop Work 1a (Div. 1)
Wednesday	Military Science 1 (Div. 1)	English 1 (Div. 1) French 1	Chemistry 1	Mathematics 1 (Div. 1)	† Drawing 1a (Div. 1 or 2) † Shop 1a (Div. 1 or 2)
Thursday	English 1 (Div. 2) German 1 (Div. 1)	German 1 (Div. 2)	Mathematics 1 (Div. 1 & 2)	Mathematics 1 (Div. 1 & 2)	Drawing 1a (Div. 1) Shop 1a (Div. 2)
Friday		English 1 (Div. 1) French 1	Chemistry 1	Drill 1	Drawing 1a (Div. 1) Shop 1a (Div. 2)
Saturday	English 1 (Div. 2) German 1 (Div. 1)	German 1 (Div. 2)	Mathematics 1 (Div. 1 & 2)	Mathematics 1 (Div. 1 & 2)	

SECOND SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	Drawing 2	Drawing 2 English 2 (Div. 1) French 2	Chemistry 2	Drill 2	Chemistry 4 (First half of semester) Mathematics 4 (Last half of semester)
Tuesday	English 2 (Div. 2) German 2 (Div. 1)	German 2 (Div. 2)	Mathematics 3 (Div. 1)	Military Science 2 (Div. 1)	Mathematics 4 (Last half of semester)
Wednesday	Drawing 2	Drawing 2	Mathematics 3 (Div. 2)	Military Science 2 (Div. 2)	Chemistry 4 (First half of semester) Mathematics 4 (Last half of semester)
Thursday	English 2 (Div. 2) German 2 (Div. 1)	English 2 (Div. 1) French 2 German 2 (Div. 2)	Mathematics 3 (Div. 1 & 2)	Mathematics 3 (Div. 1 & 2)	Chemistry 4
Friday	Drawing 2	Drawing 2	Chemistry 2	Drill 2	Chemistry 4 (First half of semester) Mathematics 4 (Last half of semester)
Saturday	English 2 (Div. 2) German 2 (Div. 1)	English 2 (Div. 1) French 2 German 2 (Div. 2)	Mathematics 3 (Div. 1 & 2)	Mathematics 3 (Div. 1 & 2)	

All divisions will be made by the dean.
† Drawing 1a and Shop Work 1a alternate on Wednesdays.

CHEMICAL ENGINEERING COURSE—SOPHOMORE YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Chemistry 5, 9 and 10	Chemistry 5, 9 and 10	Chemistry 5, 9 and 10	Drill 3	Chemistry 5, 9 and 10
	Tuesday	Mathematics 5		Physics 1	German 3	Chemistry 5, 9 and 10
	Wednesday	Mathematics 5	Chemistry 5, 9 and 10	Chemistry 5, 9 and 10	Chemistry 5, 9 and 10	Chemistry 5, 9 and 10
	Thursday	Mathematics 5	Mathematics 5	Physics 1	German 3	Chemistry 5, 9 and 10
	Friday	Mathematics 5		Military Science 3	Drill 3	Chemistry 5, 9 and 10
	Saturday	Mathematics 5	Mathematics 5	Physics 1	German 3	
SECOND SEMESTER	Monday		Chemistry 6		Drill 4	Chemistry 11
	Tuesday	Mathematics 6	Chemistry 6	Physics 2	German 4	Chemistry 11
	Wednesday	Mathematics 6	Chemistry 11	Chemistry 11	Chemistry 11	
	Thursday	Mathematics 6	Chemistry 6	Physics 2	German 4	Chemistry 11
	Friday	Mathematics 6	Mathematics 6	Military Science 4	Drill 4	Chemistry 11
	Saturday	Mathematics 6	Mathematics 6	Physics 2	German 4	

CHEMICAL ENGINEERING COURSE—JUNIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Physics 6	German 15		Drill 5	Physics 6
	Tuesday	Chemistry 7	Chemistry 21	Chemistry 12	Chemistry 12	Chemistry 12
	Wednesday	Chemistry 7	German 15	Shop 15	Shop 15	Chemistry 12
	Thursday		Chemistry 21	Chemistry 8	Chemistry 8	Chemistry 8
	Friday	Chemistry 12	Chemistry 12	Chemistry 12	Drill 5	Chemistry 8
	Saturday	Shop 15	Shop 15	Shop 15	‡ Military Science 5	
SECOND SEMESTER	Monday	Geology 1	Geology 1	Machine Design 5	Drill 6	Chemistry 13
	Tuesday	Machine Design 5		German 15a	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 13
	Wednesday	Machine Design 5	Chemistry 13	Chemistry 13	Chemistry 14 Chemistry 15 Chemistry 22	Physics 7
	Thursday	Chemistry 13	Chemistry 13	German 15a	Chemistry 14 Chemistry 15 Chemistry 22	Physics 7
	Friday	Geology 1	Geology 1	Physics 7	Drill 6	Physics 7
	Saturday	Chemistry 13	Chemistry 13	Machine Design 5	Chemistry 13 ‡ Military Science 6	

‡ Not a required subject.

CHEMICAL ENGINEERING COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Chemistry 23	Chemistry 23	Chemistry 23	‡ Drill 7 † Chemistry 23	Chemistry 23
	Tuesday	Electrical Engineering 21	Chemistry 21 or 27	Electrical Engineering 21	Electrical Engineering 21	Chemistry 23
	Wednesday	Shop Work 15	Shop Work 15	Shop Work 15	Mechanical Engineering 7	Chemistry 23
	Thursday	Chemistry 23	Chemistry 21 or 27	Chemistry 23	Chemistry 23	Chemistry 23
	Friday	Electrical Engineering 21	Mechanical Engineering 7	Chemistry 23	‡ Drill 7 † Chemistry 23	Chemistry 23
	Saturday	Mechanical Engineering 7	Chemistry 16	Chemistry 16	Chemistry 16	
SECOND SEMESTER	Monday	Chemistry 24	Chemistry 24	Chemistry 24	‡ Drill 8 † Chemistry 24	Chemistry 24
	Tuesday	Political Science 1	Electrical Engineering 22	English 10 or Sociology 3	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 24
	Wednesday	Electrical Engineering 22	Electrical Engineering 22	Chemistry 24	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 24
	Thursday	Political Science 1		English 10 or Sociology 3	Chemistry 14 Chemistry 15 Chemistry 22	Chemistry 24
	Friday	Electrical Engineering 22	Chemistry 24	Chemistry 24	‡ Drill 8 † Chemistry 24	Chemistry 24
	Saturday	Political Science 1		English 10 or Sociology 3	Chemistry 24	

† Hours to be arranged for students electing Drill 7 and 8.
‡ Not a required subject.

ELECTRICAL AND MECHANICAL ENGINEERING COURSES—SOPHOMORE YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	~~Drawing 5~~	~~Drawing 5~~	~~Drawing 5~~	Drill 3	Machine Design 2 (Div. 2) Shop Work 3 (Div. 1)
Tuesday	Mathematics 5		Physics 1		Machine Design 2 (Div. 2) Shop Work 3 (Div. 1)
Wednesday	Mathematics 5	Physics 1a	~~Military Science 3~~	Machine Design 1	~~Drawing 5~~
Thursday	Mathematics 5	~~Mathematics 5~~	Physics 1	~~Machine Design 1~~	Machine Design 2 (Div. 1) Shop Work 3 (Div. 2)
Friday	Mathematics 5	Physics 1a			Machine Design 2 (Div. 1) Shop Work 3 (Div. 2)
Saturday	~~Mathematics 5~~	~~Mathematics 5~~	Physics 1		

SECOND SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	~~Machine Design 2a~~	~~Machine Design 2a~~	~~Machine Design 2a~~	Drill 4	Drawing 8 (Div. 1) Shop Work 4 (Div. 2)
Tuesday	~~Mathematics 6~~	* Mechanical Engineering 2	Physics 2		Drawing 8 (Div. 1) Shop Work 4 (Div. 2)
Wednesday	Mathematics 6	* Mechanical Engineering 2	~~Military Science 4~~		
Thursday	~~Mathematics 6~~	Physics 2a	Physics 2	Machine Design 3	Shop 4 (Div. 1) Drawing 8 (Div. 2)
Friday	Mathematics 6	Mathematics 6	* Mechanical Engineering 2	Drill 4	Shop 4 (Div. 1) Drawing 8 (Div. 2)
Saturday	~~Mathematics 6~~	~~Mathematics 6~~	Physics 2		

* Elective.

ELECTRICAL AND MECHANICAL ENGINEERING COURSES—JUNIOR YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday		Electrical Engineering 1	Mechanical Engineering 3	Drill 5	Mech. Eng. 9 (Divs. 1) Physics 4 (Div. 2)
Tuesday	~~Physics 5~~	Mech. Eng. 5a (Div. 2) Shop 9 (Div. 1)	Mech. Eng. 5a (Div. 2) Shop 9 (Div. 1)	Mech. Eng. 5a (Div. 2) Shop 9 (Div. 1)	Physics 4 (Div. 2) Shop 9 (Div. 1)
Wednesday		Electrical Engineering 1	~~Mechanical Engineering 5~~	~~Mechanical Engineering 7~~	~~Mechanical Engineering 5a (Divs. 1 & 2)~~
Thursday	Mechanical Engineering 5	Mech. Eng. 5a (Div. 1) Shop 9 (Div. 2)	Mech. Eng. 5a (Div. 1) Shop 9 (Div. 2)	Mech. Eng. 5a (Div. 1) Shop 9 (Div. 2)	Mech. Eng. 9 (Div. 2) Physics 4 (Div. 1)
Friday	~~Mechanical Engineering 5~~	~~Mechanical Engineering 7~~	~~Electrical Engineering 1~~	~~Drill 5~~	Physics 4 (Div. 1) Shop 9 (Div. 2)
Saturday	Mechanical Engineering 5	~~Mechanical Engineering 5~~		‡Military Science 5	

SECOND SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	‡ Electrical Engineering 6	‡ Electrical Engineering 2	Machine Design 5	Drill 6	Physics 5
Tuesday	Machine Design 5	Shop Work 10	Shop Work 10	Shop Work 10	Physics 5
Wednesday	Machine Design 5	Electrical Engineering 2	Mechanical Engineering 8	Physics 5	Physics 5
Thursday	Electrical Engineering 4	Electrical Engineering 4	Electrical Engineering 4	Mechanical Engineering 8	Mechanical Engineering 10
Friday	Mechanical Engineering 10	Mechanical Engineering 8	Electrical Engineering 2	Drill 6	Electrical Engineering 4
Saturday			Machine Design 5	‡ Military Science 6	

‡ Not a required subject.

MECHANICAL ENGINEERING COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Mechanical Engineering 15	Mechanical Engineering 11	Electrical Engineering 19	‡ Drill 7	
	Tuesday	Mechanical Engineering 11	Mechanical Engineering 13	Mechanical Engineering 15	Mechanical Engineering 15	Mechanical Engineering 15
	Wednesday	Shop 16	Shop 16	Shop 16	Electrical Engineering 19	Mechanical Engineering 15
	Thursday	Mechanical Engineering 12	Mechanical Engineering 15	Mechanical Engineering 11		
	Friday	Mechanical Engineering 12	Electrical Engineering 19	Mechanical Engineering 11	‡ Drill 7	Mechanical Engineering 13
	Saturday	Electrical Engineering 23	Shop 16	Shop 16	Shop 16	
SECOND SEMESTER	Monday	Mechanical Engineering 19	Mechanical Engineering 14	Electrical Engineering 20	‡ Drill 8	Shop 17
	Tuesday	Political Science 1	* Thesis	* Thesis † Sociology 3	* Thesis	Shop 17
	Wednesday	Electrical Engineering 20		Mechanical Engineering 16	Mechanical Engineering 19	Mechanical Engineering 14
	Thursday	Political Science 1	* Thesis	* Thesis † Sociology 3	* Thesis	Mechanical Engineering 16
	Friday	Mechanical Engineering 16	Mechanical Engineering 16	Mechanical Engineering 19	‡ Drill 8	Mechanical Engineering 16
	Saturday	Political Science 1	* Thesis	* Thesis † Sociology 3	* Thesis	

* Optional with head of department.
† Required of students not taking Thesis.
‡ Not a required subject.

ELECTRICAL ENGINEERING COURSE—SENIOR YEAR.

	Day	8–9	9–10	10–11	11–12	P. M.
FIRST SEMESTER	Monday	Electrical Engineering 15	Mechanical Engineering 11		‡ Drill	
	Tuesday	Mechanical Engineering 11	Mechanical Engineering 13	Electrical Engineering 11	Electrical Engineering 13	Electrical Engineering 15
	Wednesday			Electrical Engineering 11		
	Thursday	Mechanical Engineering 12	Electrical Engineering 11	Mechanical Engineering 11	Electrical Engineering 13	Electrical Engineering 15
	Friday	Mechanical Engineering 12		Mechanical Engineering 11	‡ Drill 7	Mechanical Engineering 13
	Saturday	‡Electrical Engineering 23	Electrical Engineering 11		‡ Military Science 7	
SECOND SEMESTER	Monday	Mechanical Engineering 19	Electrical Engineering 12	* Electrical Engineering 18 † Electrical Engineering 26	‡ Drill 8	* Electrical Engineering 18
	Tuesday	† Electrical Engineering 26	Political Science 1	Electrical Engineering 25	Electrical Engineering 16	Electrical Engineering 16
	Wednesday	* Electrical Engineering 18	* Electrical Engineering 18	Electrical Engineering 12	Mechanical Engineering 19	Electrical Engineering 25
	Thursday		Political Science 1		Electrical Engineering 25	Electrical Engineering 16
	Friday		Electrical Engineering 12	Mechanical Engineering 19	‡ Drill 8	* Electrical Engineering 18
	Saturday	Electrical Engineering 12	Political Science 1	† Electrical Engineering 26	‡ Military Science 8	

* Optional with head of department.
† Required of students not taking Electrical Engineering 18.
‡ Not a required subject.

EXAMINATIONS—FIRST SEMESTER.

Seniors, Juniors, Sophomores, Freshmen.

	Thursday, January 23	Friday, January 24	Saturday, January 25	Monday, January 27	Tuesday, January 28
8 to 10 A. M.	Dairying 1 Chemistry 7 Horticulture 1 Latin 1 Latin 3	Agronomy 1 Electrical Engineering 13 German 1 Zoölogy 11	Animal Husbandry 1 History 1 History 3 Mechanical Engineering 12	Electrical Engineering 1 History 5 History 11 Military Science 1	Electrical Engineering 19 French 5 Mathematics 1 Military Science 3 Physics 4
10 to 12 A. M.	Electrical Engineering 11 English 3 Horticulture 9 Political Science 3	German 3 German 13 Horticulture 8	Agronomy 3 Electrical Engineering 23 French 3	Animal Husbandry 7 Electrical Engineering 21 Psychology 2	French 1 Geology 3 Military Science 5 Psychology 1
1.30 P. M.	English 1 Mathematics 5 Mechanical Engineering 9 Political Science 2	Botany 1 Botany 19 Botany 17 History 7 Machine Design 3 Mathematics 7 Mechanical Engineering 11	Horticulture 4 Mathematics 2 Mechanical Engineering 7 Meteorology 1 Sociology 4 Zoölogy 3	Chemistry 1 Forestry 1 Machine Design 1 Mechanical Engineering 15 Spanish 1	Chemistry 21 Machine Design 4 Mechanical Engineering 13 Physics 1 Zoölogy 1

Examinations in subjects not scheduled are arranged by instructors.

EXAMINATIONS—SECOND SEMESTER.

Juniors, Sophomores, Freshmen

	Wednesday, June 4	Thursday, June 5	Friday, June 6	Saturday, June 7	Monday, June 9
8 to 10 A. M.	Electrical Engineering 6 German 2 Horticulture 5	Dairying 3 Horticulture 2 Mathematics 3 Mechanical Engineering 1	Agronomy 2 History 2 History 4	Animal Husbandry 6 Physics 5 Chemistry 25	Animal Husbandry 3 Psychology 3
10 to 12 A. M.	Horticulture 3 Spanish 2	Botany 2 Mechanical Engineering 10	Botany 15 Botany 17 Physics 6	French 2 English 12	Chemistry 6 Zoölogy 2 Zoölogy 6 Zoölogy 7
1.30 P. M.	Horticulture 7 German 4 Machine Design 5 Military Science 2	Geology 1 Machine Design 6 Mathematics 4 Mathematics 6	Chemistry 2 French 4 Geology 2 Mechanical Engineering 8 Military Science 4		Animal Husbandry 4 Electrical Engineering 2 English 2 Mathematics 8 Physics 2

Examinations in subjects not scheduled are arranged by instructors. These examinations end upon the Monday before Commencement.

EXAMINATIONS—SECOND SEMESTER.

Seniors.

	Saturday, May 31	Monday, June 2	Tuesday, June 3
8 to 10 A. M.	Electrical Engineering 20 Electrical Engineering 22 German 14 Horticulture 12 Horticulture 13	Agronomy 6 Agronomy 7 Chemistry 24 Mechanical Engineering 16	English 10 French 6 Horticulture 6
10 to 12 A. M.	Chemistry 22 Mathematics 9 Mechanical Engineering 14	Electrical Engineering 25 English 14 History 6	Horticulture 14 Sociology 2 Political Science 1
1.30 P. M.		Botany 16 Botany 18 Chemistry 14 Electrical Engineering 12 Horticulture 10 Mechanical Engineering 17 Psychology 3	Animal Husbandry 2 Chemistry 15 Mechanical Engineering 19 Political Science 4 Political Science 5

Examination in subjects not scheduled are arranged by instructor.

THE TWO-YEAR COURSE IN AGRICULTURE.

This course was established by the state Legislature in 1895, and provides an opportunity to secure a training for their life work for those students who do not have the time, money or preparation to take a four-year college course.

The course is especially arranged, and suited for the young, bright boys of the farm, who expect to make a business of some line of agricultural or horticultural work. Although it is open to students who have had no previous training on the farm, the entrance of such is not encouraged because of their lack of practical experience. By independent work and close application, however, inexperienced students sometimes pass the course with credit.

The year's work closes the middle of May, so as to enable the students to get home for the spring work on the farm or to accept other positions for the summer. This short school year also permits four months' time for those students who are dependent upon their own resources to earn money for the following year.

The courses of study and the classes of the two-year course are, for the most part, separate and distinct from those of the four-year courses. The work of the first year is largely preparatory, being a study of the sciences underlying agriculture, together with some elementary agricultural and horticultural work. The second year contains optional studies so that it is possible for students to specialize in animal husbandry, dairying, horticulture or forestry. Ten hours per week on the average are spent in practical work on the farm, in the barn, greenhouses, shops or forest.

ADMISSION.

The course is open to those who can pass a fair and reasonable examination in reading, spelling, writing, arithmetic, English grammar, geography and history of the United States. Applicants, unless over eighteen years of age, who do not bring high school or other satisfactory certificates to show their proficiency in these subjects, will be given an entrance examination on Tuesday afternoon and Wednesday morning of the opening week of college. Applicants who are over eighteen years of age will be admitted without examination.

EXPENSES.

The expenses of the course will vary with the taste and frugality of the students and the kind of accommodations which they secure. The total average expense for the year, if the student holds a scholarship, is not far from $250. Many students by working for their board or room rent, or by doing various kinds of work about the college or village, are able to go through the year with a cash outlay not exceeding $150.

OPENING.

The course for the year will open Wednesday, September 10, 1913, and close Wednesday, May 13, 1914. A Christmas vacation of 12 days, a winter vacation of one week, and a spring vacation of six days will be given.

GRADUATION.

No degree is given at the end of the course, but a certificate of graduation is issued upon its completion or the completion of its equivalent.

Students graduating from the two-year course in 1914 and thereafter, must present to the Dean on or before the second Tuesday preceding their graduation satisfactory evidence of having had practical experience in farm work, either through having lived on a farm for at least two years subsequent to the age of 12 or through having worked on a farm for at least four months subsequent to the age of 15.

Students graduating from this course in 1913 must have at least 77 credit hours.

DESCRIPTION OF STUDIES.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. APP.

32. Farm Equipment and Farm Crops.

This course consists of lectures on the selection, planning and equipment of a farm; fencing, drainage and farm implements. Text-book and recitations upon the history, use, value, and methods of culture of our various farm crops. One afternoon per week is devoted to laboratory work. For Two-Year Students, Second Year.

Three exercises per week. 1st S.

33. Soils and Soil Physics.

This course is similar to Agronomy 2, but involves less mathematics and physics. For Two-Year Students, Second Year.

Three exercises per week. 2d S.

34. Manures and Fertilizers.

Text-book and recitations upon the constituents of farm manures and chemical fertilizers, the care and application of manures, the home-mixing of fertilizers and the modifications required by different soils and crops. For Two-Year Students, Second Year.

Two exercises per week. 2d S.

ANIMAL HUSBANDRY.

PROF. ECKMAN, MR. JONES.

31. Types and Breeds of Live Stock.

Similar to Animal Husbandry 1. For Two-Year Agricultural Students, First Year. *Four exercises per week. 2d S.*

32. Sheep Raising.

Similar to Animal Husbandry 9. Elective for Two-Year Agricultural Students, Second Year. *Three exercises per week. 1st S.*

33. Feeds and Feeding.

Similar to Animal Husbandry 3. For Two-Year Agricultural Students, Second Year. *Three exercises per week. 2d S.*

34. Animal Breeding.

Similar to Animal Husbandry 2. Elective for Two-Year Agricultural Students, Second Year. *Two exercises per week. 2d S.*

35. Veterinary Science.

Similar to Animal Husbandry 4. Elective for Two-Year Agricultural Students. *Three exercises per week. 1st S.*

36. Poultry.

Similar to Animal Husbandry 5. Elective for Two-Year Agricultural Students, Second Year. *Two exercises per week. 1st S.*

37. Veterinary Science.

Similar to Animal Husbandry 8. Elective for Two-Year Agricultural Students.

Prerequisite—Animal Husbandry 35. Three exercises per week. 2d S.

BOTANY.

PROF. BUTLER, MISS BLACK.

31. Elements of Botany.

A general view of the life processes and structure of plants, followed by the study in detail of a few type forms. Recitations and laboratory work. Tor Two-Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Plant Diseases.

A study of the more important fungous diseases and their prevention. Lectures and laboratory work. For Two-Year Agricultural Students, First Year.

Prerequisite—Botany 31. Three exercises per week. 2d S.

CHEMISTRY.

31. Elementary Applications.

An elementary course, with special reference to the elements of plant food, composition of fertilizers, elements subject to exhaustion in soils, etc. For Two-Year Agricultural Students, First Year.

Two exercises per week. 2d S.

DAIRYING.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

31. Milk—Milk Testing.

Lectures and recitations on the composition and properties of milk, the Babcock test, the lactometer, and the inspection of milk; value and methods of keeping records of dairy cows. Coöperation in dairying. For Two-Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Buttermaking.

Comparative study of different systems of creaming and factors influencing the efficiency of the hand separator. A study of commercial starters, cream ripening, churning, marketing, and scoring of butter. Elective for Two-Year Agricultural Students, Second Year.

Three exercises per week. 1st S.

33. Market Milk.

A study of the value of milk as a food, the production and handling of market milk and of certified milk. Commercial milk inspection. Exercises will be given in the judging of milk and cream and in the scoring of dairies. Elective for Two-Year Agricultural Students, Second Year. *Three exercises per week. 2d S.*

34. Cheese Making.

Lectures and laboratory work covering the details of manufacture, curing and marketing of the more important kinds of cheese.

Three exercises per week. 2d S.

DRAWING.

31. For Two-Year Agricultural Students, Second Year.

One exercise per week. 1st S.

ENGLISH.

31. Grammar and Elementary Composition. Miss Pettee.

For Two-Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Grammar and Composition. Miss Pettee.

A continuation of English 31. For Two-Year Agricultural Students, First Year.

Prerequisite—English 31. *Three exercises per week. 2d S.*

FORESTRY.

PROF. FOSTER.

31. Farm Forestry.

A study of the general principles of forestry, with particular reference to the care and management of woodlots; the various methods of cutting and reproducing forests; artificial reforestation; nursery practice; seeding and planting; estimating standing timber; log scales; protection of forests; markets. For Two-Year Agricultural Students, First Year. *Two exercises per week. 2d S.*

HORTICULTURE.

PROF. GOURLEY, ASST. PROF. WOLFF, MR. LUMSDEN.

31. Vegetable Gardening.

A study of the commercial methods of vegetable growing. Special attention is given to the home garden. For Two-Year Agricultural Students, First Year. *Three exercises per week. 1st S.*

32. Fruit Growing. Prof. Wolff.

This course embraces a study of commercial orcharding; each fruit being studied with reference to planting, cultivating, pruning, fertilizing, picking, packing, storing and marketing. For Two-Year Agricultural Students, Second Year. *Three exercises per week. 1st S.*

33. Greenhouse Management. Mr. Lumsden.

Combined lecture, demonstration and laboratory course in greenhouse management. Elective for Two-Year Agricultural Students, Second Year. *Three exercises per week. 1st S.*

34. Home Decoration. Mr. Lumsden.

A study of ornamental trees, shrubs and flowers; their culture, proper arrangement and decorative value, with special reference to home surroundings. Elective for Two-Year Agricultural Students, Second Year. *Three exercises per week. 2d S.*

35. Orchard Problems. Prof. Gourley.

A course dealing with the principal problems of farm orchards and commercial orchard management. This course is designed to show the application of the principles of fruit growing to practical orcharding conditions. Elective for Two-Year Agricultural Students, Second Year. *Two exercises per week. 2d S.*

MATHEMATICS.

PROF. STECK.

31. Arithmetic.

A review of arithmetic. For Two-Year Agricultural Students, First Year. *Three exercises per week, first twelve weeks, 1st S.*

32. Bookkeeping.

A short course in farm bookkeeping. For Two-Year Agricultural Students, First Year. *Three exercises per week, last six weeks, 1st S.*

MILITARY SCIENCE AND TACTICS.

LIEUT. HUNT.

DRILL.

31. Military Drill.

For Two-Year Agricultural Students, First Year.

Two exercises per week. 1st S.

32. Military Drill.

For Two-Year Agricultural Students, First Year.

Two exercises per week. 2d S.

33. Military Drill.

For Two-Year Agricultural Students, Second Year.

Two exercises per week. 1st S.

34. Military Drill.

For Two-Year Agricultural Students, Second Year.

Two exercises per week. 2d S.

MILITARY SCIENCE.

31. Infantry Drill Regulations.

Practical instruction and lectures. For Two-Year Agricultural Students, First Year. *One exercise per week. 1st S.*

32. Manual of Guard Duty and Small Arms Firing Regulations.

Practical instruction and lectures. For Two-Year Agricultural Students, First Year.

Prerequisite—Military Science 31. *One exercise per week. 2d S.*

33. Field Service Regulations.

For Two-Year Agricultural Students, Second Year.

Prerequisite—Military Science 32. *One exercise per week. 1st S.*

34. Field Service Regulations.

Lectures on advance guards, outposts, etc. Continuation of Military Science 33. For Two-Year Agricultural Students, Second Year.

Prerequisite—Military Science 33. *One exercise per week. 2d S.*

PHYSICS.

PROF. FISHER.

31. Elementary Physics.

A study of the principles of Physics, using as centers certain important practical machines, as the steam engine, the dynamo, the electric motor, etc. For Two-Year Agricultural Students, Second Year.

Four exercises per week. 1st S.

SHOP WORK.

31. Wood Work. Mr. Philbrick.

For Two-Year Agricultural Students, First Year.

Two exercises per week. 2d S.

32. Iron Work. Mr. Donham.

For Two-Year Agricultural Students, Second Year.

Two exercises per week. 2d S.

ZOÖLOGY.

31. Human Psysiology and Hygiene.

A study of the structure, physiology and care of the human body. Special attention will be given to the fundamental principles of Zoölogy, the nature of parasitic and bacterial diseases and the means of prevention. For Two-Year Agricultural Students, First Year.

Three exercises per week. 1st S.

32. Economic Entomology.

The habits, life histories and means of control of the more important injurious insects of the orchard, garden and field crops. For Two-Year Agricultural Students, First Year. *Three exercises per week. 2d S.*

33. Special Zoölogy.

Arranged to meet the needs of Two-Year Students who wish to elect

Zoölogy during the second year. Students are requested to see the instructor before electing this course.

Three exercises per week. 1st S.

34. Special Zoölogy.

A continuation of Zoölogy 33. *Three exercises per week. 2d S.*

TWO-YEAR COURSE OF STUDY.

First Year.

FIRST SEMESTER.

Botany 31	Elements of Botany	3
Dairying 31	Milk and Milk Testing	3
English 31	Grammar and Elementary Composition	3
Horticulture 31	Vegetable Gardening	3
Mathematics 31	Arithmetic	2
Mathematics 32	Bookkeeping	1
Drill 31	Military Drill	1
Military Science 31	Infantry Drill Regulations	1
Zoölogy 31	Vertebrate Anatomy and Physiology	3

SECOND SEMESTER.

Animal Husb. 31	Breeds of Live Stock	4
Botany 32	Plant Diseases	3
Chemistry 31	Elementary Applications	2
English 32	Grammar and Composition	3
Forestry 31	Farm Forestry	2
Drill 32	Military Drill	1
Military Science 32	Manual of Guard Duty	1
Shop Work 31	Wood Work	2
Zoölogy 32	Economic Entomology	3

Students who come prepared to take Freshman English and Mathematics may elect one or both of these subjects in place of the corresponding subjects of the two-year course. Also, in such case, Forestry 1 or Horticulture 33 may be substituted for either English 31, or Mathematics 31.

Second Year.

FIRST SEMESTER.

Agronomy 32	Farm Equipment and Farm Crops	3
**Animal Husb. 35*	Veterinary Anatomy	3
**Animal Husb. 7*	Live Stock Management	2
**Animal Husb. 32*	Sheep Raising	3
**Animal Husb. 36*	Poultry	2
**Dairying 32*	Buttermaking	3
Drawing 31	Mechanical Drawing	1

* Elective. Elect courses to make a total of at least 18 hours.

**Forestry 2*	Dendrology	3
Horticulture 32	Fruit Growing	3
**Horticulture 33*	Plant Growth and Greenhouse	3
Drill 33	Military Drill	1
Military Science 33	Advance Guards, Outposts, etc.	1
Physics 31	Elementary Physics	4

SECOND SEMESTER.

Agronomy 33	Soils and Soil Physics	3
Agronomy 34	Manures and Fertilizers	2
Animal Husb. 33	Feeds and Feeding	3
**Animal Husb. 34*	Animal Breeding	2
**Animal Husb. 37*	Veterinary Science	3
**Dairying 33*	Market Milk	3
**Dairying 34*	Cheesemaking	3
**Forestry 5*	Forest Mensuration	3
**Horticulture 34*	Home Decoration	3
**Horticulture 35*	Orchard Problems	2
Drill 34	Military Drill	1
Military Science 34	Advance Guards, Outposts, etc.	1
Shop Work 32	Iron Work	2

*Elective. Elect courses to make a total of at least 18 hours.

TWO-YEAR COURSE IN AGRICULTURE—FIRST YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	English 31		Mathematics 31 and 32	Drill 31	Horticulture 31
Tuesday	Dairying 31	Military Science 31		Horticulture 31	Dairying 31 (Div. 1) Zoölogy 31 (Div. 2)
Wednesday	English 31	Botany 31	Mathematics 31 and 32	Horticulture 31	Dairying 31 (Div. 2) Zoölogy 31 (Div. 1)
Thursday	Dairying 31	Botany 31		Zoölogy 31	Botany 31 (Div. 1)
Friday	English 31	Mathematics 31 and 32	Zoölogy 31	Drill 31	Botany 31 (Div. 2)
Saturday	Dairying 31 (Div. 3)	Dairying 31 (Div. 3)	Dairying 31 (Div. 3)		

SECOND SEMESTER

Monday	English 32	Chemistry 31	Animal Husbandry 31	Drill 32	Shop 31 (Div. 1)
Tuesday	Forestry 31	Botany 32 (Div. 1) Shop 31 (Div. 2)	Botany 32 (Div. 1) Shop 31 (Div. 2)	Botany 32 (Div. 1) Shop 31 (Div. 2)	Animal Husbandry 31
Wednesday	English 32	Chemistry 31	Shop 31 (Div. 2)	Shop 31 (Div. 2)	Zoölogy 32
Thursday		Zoölogy 32	Botany 32	Animal Husbandry 31	Forestry 31
Friday	English 32	Military Science 32	Botany 32	Drill 32	Botany 32 (Div. 2) Shop 31 (Div. 1)
Saturday		Zoölogy 32		Animal Husbandry 31	

TWO-YEAR COURSE IN AGRICULTURE—SECOND YEAR.

FIRST SEMESTER

Day	8–9	9–10	10–11	11–12	P. M.
Monday	Horticulture 32	Agronomy 32		Drill 33	* Animal Husbandry 32 * Dairying 32 * Forestry 2
Tuesday		* Animal Husbandry 32	* Animal Husbandry 35 * Horticulture 33	* Forestry 2 Physics 31	* Animal Husbandry 35 * Animal Husbandry 36
Wednesday	* Dairying 32	* Dairying 32	Physics 31	* Animal Husbandry 32 * Dairying 32	Horticulture 32
Thursday	Horticulture 32	* Animal Husbandry 36	* Animal Husbandry 35 * Horticulture 33	* Forestry 2 Physics 31	Agronomy 32
Friday	Military Science 33	Agronomy 32		Drill 33	* Horticulture 33
Saturday	Drawing 31	Drawing 31	Drawing 31	Physics 31	

SECOND SEMESTER

Monday	Agronomy 33	* Animal Husbandry 34 * Horticulture 34	Agronomy 34	Drill 34	* Dairying 33 * Horticulture 35
Tuesday	Military Science 34	Animal Husbandry 33	* Animal Husbandry 37 * Dairying 34 * Forestry 5	Dairying 33	
Wednesday	Animal Husbandry 33	Shop 32	Shop 32	Shop 32	* Animal Husbandry 37 * Dairying 34 * Forestry 5
Thursday	Animal Husbandry 33	Animal Husbandry 33	Agronomy 34	* Horticulture 35	* Animal Husbandry 34 * Horticulture 34
Friday	Agronomy 33	* Dairying 33	* Animal Husbandry 37 * Dairying 34 *Forestry 5	Drill 34	Agronomy 33
Saturday	* Horticulture 34	* Horticulture 34	Shop 32	Shop 32	

* Elective.

TEN-WEEK DAIRY COURSE.

OPENING.

The Eighteenth Annual Dairy School of the New Hampshire College opens Thursday, January 2, and closes Friday, March 7. Students should present themselves for registration at Thompson Hall the first day of this session. Lectures and laboratory work will begin the following day.

ADMISSION.

The school is open to men and women sixteen years of age and upward. No entrance examination is required. However, in order to make the best use of the instruction, the student should have a good common school education. The experiences of previous years have shown that the subject in which the student is most deficient is arithmetic, especially percentage and decimals. Both of these divisions of arithmetic are used to a large extent in solving problems in the creamery and also in computing rations for the dairy cow. It is, therefore, well for those planning to take the dairy course to review these subjects before entering. To be most benefited by the school, the students should have had some practical experience on a farm or in a creamery.

EXPENSES.

A tuition of five dollars is payable on registering, at the beginning of the term; other expenses, including books, white suits, and room and board for ten weeks, amount to approximately sixty dollars.

CERTIFICATES.

Students completing the required work of the dairy school and passing satisfactory examinations, will be given certificates.

PRIZES.

Through the courtesy of Mr. T. J. Davis, Nutwood Farm, Durham, three suitable prizes will be given to students who rank the highest in judging dairy cattle.

AGRONOMY.

PROF. TAYLOR, ASST. PROF. APP.

50. Forage and Silage Crops.

Ten lectures upon forage and silage crops which are suited to New Hampshire conditions. The matter of varieties, preparation of the ground, time of seeding, amount of seed, harvesting and storing will be discussed. Soiling crops, the construction of silos and the growing of crops for the silo will be treated in as much detail as the time allows. Laboratory periods in corn judging and in seed testing will be given.

51. Manures and Fertilizers.

Eight lectures upon the constituents of farm manures and chemical

fertilizers; the care and application of manure; the home mixing of fertilizers and the modifications for different soils and crops.

ANIMAL HUSBANDRY.

PROF. ECKMAN.

42. Breeds of Dairy Cattle.

Lectures and recitations upon the origin, history, distribution, characteristics, adaptability and standard of excellence of the pedigreed breeds of cattle, with special reference to the selection of breeds and of individual animals for the herd. The practical work will consist of scoring and judging representatives of the various breeds of dairy cattle, and in tracing pedigrees of animals in the herd books of the different breeds. Two lectures and one judging period per week.

44. Diseases of Cattle.

Lectures and recitations upon the anatomy and physiology of the cow, with special reference to the digestive, reproductive and milk-producing organs. The common diseases, their causes and the methods of treatment will be discussed.

45. Feeds and Feeding.

Lectures and recitations upon the composition and digestibility of feeding stuffs. A daily study of the different grains and feeds, and their value in a dairy ration. Practice will be given in computing rations for the dairy cow and in fiftting animals for the show ring.

DAIRYING.

PROF. RASMUSSEN, MR. WILSON, MR. PIERPONT.

40. Buttermaking.

Lectures and recitations on the different systems of creaming milk and a comparison of the efficiency of different cream separators under varying conditions; cream ripening; churning, washing, marketing and scoring of butter.

41. Dairy Bacteriology.

Lectures and demonstrations on the function of bacteria and the application of bacteriological principles to dairy work, such as pasteurization, cream ripening, commercial starters, and deterioration of butter.

42. Dairy Practice.

The equipment of the dairy building is such that the laboratory work can be made applicable both to farm and factory conditions. The student will have an opportunity to study construction, efficiency and operation of the various machines used in the handling of milk and making of butter. The use of the Babcock test in apportioning the money value of milk is regulated by state law, and the importance of the test in the successful management of the dairy herd has created a demand for more complete and practical training. The details of the test will be studied carefully, and the student will practice testing milk,

cream, skim-milk, and butter-milk until fully competent to perform the work for himself or for others.

43. Market Milk.

A study of the value of milk as a food and in relation to public health. The production and handling of market milk, and of certified milk. Commercial milk inspection. Exercise will be given in the scoring of milk and cream, and in the scoring of dairies.

44. Milk Testing.

This course will consist of a study of the composition of milk; its physical and chemical properties; the various methods of sampling and testing milk and cream; the testing of dairy herds; the organizing and operating of cow test associations.

EXTENSION WORK.

At the last session of the New Hampshire Legislature the sum of $5,000 was appropriated for conducting agricultural extension work in the state, and $1,500 for issuing helpful publications. These appropriations are to extend over two years, one half of the above amounts being available each year.

Extension work is carrying the assistance of the college and station to the farm and to the home. Whenever possible practical demonstrations are given of approved methods and practices in the different neighborhoods, on familiar soils, under conditions that are known, and where the results may be observed.

Extension work should mean a great deal to the future industrial prosperity of the state. It should be of much value in helping to develop and at the same time protect and preserve the natural resources of our commonwealth.

Funds required for the different lines of endeavor and the available time of the college and station staff from their other duties have restricted the work for the present mainly to the following lines:

1. *The Answering of Letters of Inquiry.*

2. *Demonstrations.*

Demonstrations of approved farm practices in different parts of the state.

3. *Scientific Advice on Farm and Orchard Management.*

4. *Farm Surveys.*

This work is being done in coöperation with the Bureau of Plant Industry to determine actual farm conditions in different sections of the state.

5. *Orchard Surveys.*

The object of this work is to secure first-hand information relative to the conditions of orcharding in New Hampshire.

6. *Dairy Cow Test Associations.*

A very successful association has been organized at South Lyndeborough. The result of the first year's work will be set forth in bulletins to be issued soon.

7. *Coöperative Experiments.*

Coöperative experiments are under way with seven farmers in Grafton and Coös counties in handling hay lands and with the County Farms of Sullivan and Carroll counties.

8. *Variety Tests of Corn.*

This is a coöperative test with county farms. It is planned to test best varieties of corn grown in the state under similar conditions on county farms where the work may be inspected by the corn growers of the county. Tests were conducted this year on the county farms in Carroll, Hillsborough, Sullivan, Merrimack, Rockingham, and Cheshire counties.

9. *The Use of Agricultural Lime on New Hampshire Soils.*

The use of lime has been under test this year at twenty-five different points in the state.

10. *Census of Sheep Industry in New Hampshire.*

The aim of this work is to help extend the interest in sheep husbandry by first obtaining knowledge of the true status of the industry.

11. *Exhibits at Fairs.*

Instructive exhibits are placed at our leading fairs setting forth in a comprehensive manner the work of the college and station and other helpful agricultural principles and practices.

12. *Agricultural Lectures.*

Members of the college and station are called upon frequently to address farmers' institutes, granges, and other gatherings.

13. *Judges.*

The members of the college and station staff frequently act as judges of fruit, dairy products, corn and live stock at our leading fairs and grange meetings.

14. *Agricultural Reading Courses.*

Suitable books, bulletins, and other literature are recommended for these courses. Two hundred and seven were enrolled last year.

15. *Identification.*

Fruit, weeds, insects and plant diseases are identified. In the case of weeds, insect pests and plant diseases recommendations are made for controlling them.

16. *County Institute Excursions.*

Citizens of each county are to be asked next August on county day to visit New Hampshire College and Station to inspect the work. In place of the County Institute Excursions a state-wide Farmers' Picnic was held at Durham on August 15, 1912. Excursions were run from

different points of the state and about two thousand people attended the meeting.

17. *Special Meetings.*

Last winter and spring there were held at the college three one-day meetings: the first one was devoted to Poultry Husbandry, the second to Dairy Husbandry, and the third to Orcharding. These meetings were very well attended and much interest was taken in the programs. The speakers were for the most part men who are making a success of that particular line and are recognized authorities.

18. *Breeders' Association.*

A Cheshire County Breeders' Association has been organized and has already accomplished some very effective work.

19. *Federation of the Agricultural Associations of New Hampshire.*

Eight of the leading agricultural associations of the state have formed a federation for coöperation and development of a better agriculture in New Hampshire.

20. *Information Circulars and Bulletins.*

During the year 17 press bulletins and 8 extension circulars were published dealing in a simple, practical manner with some of the most vital factors of New Hampshire agriculture.

NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION.

Most of the Agricultural Experiment Stations of the various states including that of New Hampshire, were founded in 1888 by an act of Congress, approved March 2, 1887, known as the Hatch Act, in honor of its author. This act appropriated fifteen thousand dollars ($15,000) annually for the maintenance of an Agricultural Experiment Station in each state. This act provides:

"That it shall be the object and duty of said Experiment Stations to conduct original researches or verify experiments on the physiology of plants and animals; the diseases to which they are severally subject with the remedies for the same; the chemical composition of useful plants at their different stages of growth; the comparative advantages of rotative cropping as pursued under a varying series of crops; the capacity of new plants or trees for acclimation; the analysis of soils and water; the chemical composition of manures, natural and artificial, with experiments designed to test their comparative effects on crops of different kinds; the adaptation and value of grasses and forage plants; the composition and digestibility of the different kinds of food for domestic animals; the scientific and economic questions involved in the production of butter and cheese; and such other researches or experiments bearing directly on the agricultural industry of the United States as may in each case be deemed advisable, having due regard to the varying conditions and needs of the respective states and territories." The

act also provides that the results of such work shall be published in bulletins and reports.

A further endowment of the Experiment Stations to provide specifically for research work was made by the Adams Act, passed by Congress and approved March 16, 1906, which provided an increased annual appropriation which now amounts to $15,000 each year. This appropriation is specifically limited to the "necessary expenses of conducting original researches or experiments," and the rulings of the United States Department of Agriculture, which is vested with the supervision of the expenditures under this act, require that this appropriation be spent in fundamental investigations or researches to determine the underlying causes and principles of agricultural science, rather than for mere experiments to secure results of immediate practical application as contemplated under the Hatch Act appropriation. The purposes of the two acts are therefore supplementary but distinct.

The New Hampshire Agricultural Experiment Station is organized as a department of the New Hampshire College of Agriculture and Mechanic Arts, and is administered by a Board of Control, elected by its Board of Trustees.

The publications of the station comprise 162 bulletins of the regular series and 14 circulars, 6 technical bulletins, 5 scientific contributions, and 4 school bulletins. The bulletins are issued at irregular intervals and are sent to all residents of New Hampshire requesting them. Back numbers will be sent as long as the supply lasts.

The station is prepared to give advice and assistance to the farmers of New Hampshire along the following lines:

The maintenance of soil fertility, including the rotation of crops and the selection and use of manures and fetilizing materials.

The selection of varieties of grains, grasses and forage crops and methods of culture.

The selection of varieties of fruits and vegetables and the management of orchards.

The examination of seeds that are suspected of being unsound or adulterated; the identification of grasses, weeds, and other plants; the prevention of fungous diseases of plants.

The identification of insects and the control of such as are injurious.

The feeding of animals, including calculation of rations and use of various feeding stuffs.

The methods of milk production, creamery and dairy methods and machinery and the scoring of dairy products.

The testing of milk to determine the value of dairy cows.

The planting and care of forest trees and the management of farm wood lots.

Any citizen of New Hampshire has the right to apply to the station for such assistance as it can give, and all such requests will be given prompt attention.

DEGREES CONFERRED IN 1912.

MASTER OF SCIENCE.

Margaret DeMeritt, B.S. 1911.

BACHELOR OF SCIENCE.

Agriculture.

Berry, George Wesley.
Davis, Arthur Grant.
Fisher, Frank Gordon.
Huse, Oscar Earl.
Phillips, Paul Milton.
Sawyer, Arthur Herbert.
Skinner, Russell Emerson.
Tuttle, Harry Benjamin.
Watson, Myles Standish.

Arts and Science.

Bachelder, John Hutchins.
Bailey, Thomas Craig.
Catlin, Harwood Baldwin.
Cole, Florence Viola.
Crosby, Percy Raymond.
Donnelly, Edith Gertrude.
Hadley, Charles Harvey, Jr.
Hayes, Bernice Marion.
Manter, Jerauld Armington.
O'Malley, Michael Joseph.
Perkins, Irving Clement.
Towle, George Wesley.
Tucker, Herbert Ray.
Warner, William Pearl, Jr.
Wood, Arthur Gale.

Chemical Engineering.

Buckminster, Paul DeMeritt.
Gowen, Philip Lewis.
Holden, Hiram Chester.
Leighton, Alan.
Robinson, John Everett.
Tucker, Raymond Hodgdon.

Electrical Engineering.

Bunker, Lewis La Forest Harold.
DeMeritt, Stephen.
Drew, Lyle Stevens.
Jennings, Earle Brigham.
Lowd, Clarence Mortimer.
McLucas, Charles Abraham.
Morgan, Ralph Clifford.
Pettengill, James Byron.
Quimby, Waldo Hutchinson.

Mechanical Engineering.

Leighton, Arthur John.
Rogers, William Edward.
Shapleigh, Edward Eugene.

Unclassified.

Whittemore, Hollie Leon.

Two-Year Certificates.

Bell, Charles Edward.
Blaisdell, Willis Stanley.
Chickering, Arthur Morgan.
Clark, Henry Howard.
Davis, Wendell Philips.
Mitchell, Karl Perkins.
Ober, Frank Carroll.
Piper, Ralph Boutelle.
Sherburne, Burton Wesley.
Smith, Leslie Bernard.

Eastman, Arthur Dearborn.
Elkins, Harold David
Gray, Edward Roberts.
Hall, Azel Storrs.
Henderson, Charles Dewing.
Huntoon, Lawrence Fred.
Steele, Philip Emerson.
Swasey, Fred Harold.
Thomas, Reginald Robert.
Trow, Henry George.
Webster, Myrl Henry.
Wood, Browning Paton.

HONOR LIST FOR 1912.

SPECIAL HONOR.

Average of 90 for the year's work.

1912.

George Wesley Berry, Agricultural Course.

1913.

Robin Beach, Electrical Engineering Course.
Moses Gale Eastman, Agricultural Course.

1914.

Frances Augusta Nudd, Arts and Science Course.

1915.

Leland Whitney Crafts, Arts and Science Course.

HONOR.

Average of 80 for the year's work.

1912.

John Hutchins Bachelder, Arts and Science Course.
Lewis LaForest Harold Bunker, Electrical Engineering Course.
Arthur Grant Davis, Agricultural Course.
Edith Gertrude Donnelly, Arts and Science Course.
Philip Lewis Gowen, Chemical Engineering Course.
Charles Harvey Hadley, Jr., Arts and Science Course.
Bernice Marion Hayes, Arts and Science Course.
Hiram Chester Holden, Chemical Engineering Course.
Earle Brigham Jennings, Electrical Engineering Course.
Alan Leighton, Chemical Engineering Course.
Jerauld Armington Manter, Arts and Science Course.
Michael Joseph O'Malley, Arts and Science Course.
John Everett Robinson, Chemical Engineering Course.
Russell Emerson Skinner, Agricultural Course.
Herbert Ray Tucker, Arts and Science Course.
Arthur Gale Wood, Arts and Science Course.

1913.

Charles Howard Batchelder, Arts and Science Course.
Roy Eugene Batchelder, Agricultural Course.
Wesley Elton Davis, Electrical Engineering Course.

Wesley Edward Eastman,	Arts and Science Course.
Marion Emma Gillespie,	Arts and Science Course.
Vivian Blanche Hamel,	Arts and Science Course.
Winifred Hodgdon,	Arts and Science Course.
Donald Babcock Keyes,	Chemical Engineering Course.
Ray Hubert Knight,	Agricultural Course.
Gilman Anjavine Lang,	Electrical Engineering Course.
John Christie Morgan,	Chemical Engineering Course.
Regina O'Connor,	Arts and Science Course.
Harold Averill Robinson,	Chemical Engineering Course.
Daniel Phineas Alston Willard,	Arts and Science Course.

1914.

Ray Warren Combs,	Agricultural Course.
Guy Leslie Ham,	Chemical Engineering Course.
Wallace Whittier Wilder,	Agricultural Course.
Della Olivia Worster,	Arts and Science Course.

1915.

Mario James Broggini,	Chemical Engineering Course.
Oscar Choate Brown,	Chemical Engineering Course.
Charles Wesley Davis,	Chemical Engineering Course.
John Ingraham Garside,	Engineering Course.
Anna Morse Hopkins,	Arts and Science Course.
Marion Edgerly Nash,	Arts and Science Course.
Helen Waldron Plumer,	Arts and Science Course.

PRIZE RECORD FOR 1912.

BAILEY PRIZE — $10.

Given by Dr. C. H. Bailey, Class of '79 and E. A. Bailey, Class of '85.

John Everett Robinson, Pembroke.

ERSKINE MASON MEMORIAL PRIZE.

Edith Gertrude Donnelly, Dover.

CHASE-DAVIS MEMORIAL MEDALS.

Gold Medal.

Clarence Mortimer Lowd, Durham.

Silver Medal.

Hiram Chester Holden, Manchester.

SENIOR STANDING HIGHEST IN THE MILITARY DEPARTMENT.

John Hutchins Bachelder, Concord.

WINNERS OF INDIVIDUAL PRIZE DRILL.

Gold Medal.

James Arthur Tufts, Jr. '14, Exeter.

Silver Medal.

John Spalding Elliott, '15, Madbury.

Bronze Medal.

Timothy Patrick Reardon, '14, Concord.

PRIZE SABER—EXCELLENCE IN DRILL.

Philroy Clifton Gale, '13, Concord.

Honorable Mention.

Harwood Baldwin Catlin, '12, Hill.
Donald Babcock Keyes, '13, Durham.

SENIORS REPORTED TO THE ADJUTANT-GENERAL OF THE ARMY FOR APTITUDE IN DRILL.

John Hutchins Bachelder, Concord.
George Wesley Berry, Stratham.
Stephen DeMeritt, Durham.

COLOR COMPANY—YEAR 1912-13.

Company A.

VALENTINE SMITH SCHOLARSHIPS.

Donald Babcock Keyes, '13.
Ray Warren Combs, '14.
Leland Whitney Crafts, '15.
Ralph Waldo Doeg, '16.

ROSTER OF BATTALION.

For 1912-1913.

COMMANDANT.

First Lieutenant C. A. Hunt, Seventh United States Infantry.

CADET OFFICERS AND NON-COMMISSIONED OFFICERS.

FIELD AND STAFF.

Major, P. C. Gale.
First Lieutenant, D. H. Andrew, *Adjutant.*
Second Lieutenant, S. Sanborn, *Quartermaster.*
Sergeant Major, W. H. L. Brackett.
Quartermaster Sergeant, G. A. Halvorsen.
Color Sergeant, C. G. Paulson.

Physical Instructor.

Second Lieutenant, P. C. Jones.

BAND.

Chief Musician, H. W. Sanborn.
Principal Musician, M. G. Eastman.
Drum Major, H. R. McCartney.

Sergeants.

H. M. Eastman.
J. H. Annis.

Corporals.

R. J. Bean.
R. W. Garland.
M. J. Broggini.
E. H. Downing.
E. L. Sanborn.

COMPANY A.

Captain, N. D. Paine.
First Lieutenant, W. E. Arthur.
Second Lieutenant, P. T. Sellers.
First Sergeant, G. N. Perkins.

Sergeants.

P. M. Blake.
D. W. Ladd.
J. S. Elliott.
R. W. Combs.

Corporals.

C. R. Heath.
C. W. Davis.
P. E. Corriveau.
R. E. Came.
A. E. Bartlett.

Musician.

G. F. Cobleigh.

COMPANY B.

Captain, T. J. Twomey.
First Lieutenant, T. A. Davis.
Second Lieutenant, L. D. Jesseman.
First Sergeant, J. E. Davis.

Sergeants.

N. McCrillis.
B. G. Odiorne.
R. W. Smart.
J. E. Kiley.

Corporals.

A. J. Grant.
R. A. Knight.
J. I. Garside.
H. L. Farnham.
H. H. Lindquist.

Musician.

W. R. Place.

COMPANY C.

Captain, C. H. Rogers.
First Lieutenant, J. A. Tufts.
Second Lieutenant, T. P. Reardon.
First Sergeant, G. L. Ham.

Sergeants.

C. J. Dresser.
T. G. Yaxis.
A. L. Murdoch.
R. H. Welsh.

Corporals.

J. F. Thompson.
E. E. Watson.
C. F. Rines.
C. A. Reed.
L. S. Riford.

Musician.

D. W. Bissell.

COMPANY D.

Captain, H. V. Bent.
First Lieutenant, F. C. Smith.
Second Lieutenant, T. P. Dustin.
First Sergeant, W. P. Davis.

Sergeants.

C. B. Blodget.
A. E. Robie.
B. B. Bean.
G. B. Huse.

Corporals.

G. C. Robinson.
E. A. Richardson.
R. A. Priest.
J. W. Dawson.
W. A. Cole.
H. L. Kendall.

Musician.

C. L. Graham.

STUDENTS.

a—Agricultural course; *c*—Chemical Engineering course; *a* and *s*—Arts and Science course; *m e*—Mechanical Engineering course; *e e*—Electrical Engineering course; *u*—Unclassified course. Freshmen in the engineering courses and sophomores in the electrical and mechanical engineering courses are designated by *e* only.

GRADUATE STUDENTS.

Name.	P. O. Address.
Charles Farnum Whittemore, B. S., *c*	*Pembroke.*

SENIORS.

Name.	P. O. Address.
Adams, Carroll Sidney, *a* and *s*	*Marlborough.*
Andrew, David Henry, Jr., *a* and *s*	*Newbury.*
Barrett, Lawrence Newton, *e e*	*Hampton Falls.*
Batchelder, Charles Howard, *a* and *s*	*Seabrook.*
Batchelder, Roy Eugene, *a*	*Sugar Hill.*
Beach, Robin, *e e*	*Durham.*
Bradford, Maurice Palmer, *a* and *s*	*Derry.*
Christie, Jesse Roy, *a*	*R. R. 2, Manchester.*
Davis, Wesley Elton, *e e*	*Durham.*
Eastman, Moses Gale, *a*	*R. R. 1, Laconia.*
Eastman, Wesley Edward, *a* and *s*	*Andover.*
Falconer, William Marshall, *a*	*Milford.*
Foster, Perley Addison, *a*	*Claremont.*
Gale, Philroy Clifton, *m e*	*Concord.*
Gillespie, Marion Emma, *a* and *s*	*Manchester.*
Hamel, Vivian Blanche, *a* and *s*	*Nashua.*
Hayden, Harry Eugene, *a* and *s*	*Durham.*
Hilliard, Leon Wilcomb, *e e*	*Kingston.*
Hodgdon, Winifred, *a* and *s*	*Portsmouth.*
Jenness, Augustine Watson, *a* and *s*	*Dover.*
Jenness, Chester Albert, *a* and *s*	*Dover.*
Jones, Philip Cowell, *a* and *s*	*Milton.*
Keyes, Donald Babcock, *c*	*Durham.*
Knight, Ray Hubert, *a*	*Marlborough.*
Ladd, John Everett, *a*	*Raymond.*
Lane, Gilbert Frederic, *c*	*Durham.*
Lang, Gilman Anjavine, *e e*	*Newmarket.*
Leavitt, Van Earle, *a* and *s*	*Laconia.*
Locke, Harriet Esther, *a* and *s*	*Hampton.*
Lord, Mabel Estelle, *a* and *s*	*Contoocook.*
McPheters, George Allen, *a* and *s*	*Portsmouth.*
Morgan, John Christie, *c*	*Durham.*
Neal, Cecil Maurice, *a* and *s*	*Portsmouth.*
O'Connor, Regina, *a* and *s*	*Newmarket.*
Paine, Nathan Deane, *e e*	*Berlin.*
Peavey, Harold Forrest, *m e*	*Wolfeboro.*
Richmond, Alfred Leroy *e e*	*Nashua.*
Robinson, Harold Averill, *c*	*Elmwood.*
Rogers, Charles Harold, *a* and *s*	*Exeter.*
Sanborn, Ralph Moses, *a* and *s*	*Lakeport.*
Scott, Charles Field, *a* and *s*	*Durham.*
Tubman, Perry Elliot, *e e*	*Portsmouth.*
Twomey, Thomas James, *c*	*Concord.*

Name.	P. O. Address.
Whiting, Paul Nathan, *a*	*Amherst.*
Work Clayton Wight, *m e*	*Exeter.*
Yates, James Black, *m e*	*Biddeford, Me.*

JUNIORS.

Name.	P. O. Address.
Annis, John Harold, *a* and *s*	*Manchester.*
Arthur, Walter Edward, *c*	*Manchester.*
Bissell, Don Warren, *c*	*Keene.*
Blake, Percival Moulton, *a* and *s*	*Hampton.*
Cole, Annie Louise, *a* and *s*	*R. R. 2, Dover.*
Combs, Ray Warren, *a*	*Hampton Falls.*
Davis, John Edgar, *a* and *s*	*Portsmouth.*
Davis, Thomas Albert, *e e*	*Dover.*
Dresser, Clarence Jewell, *e e*	*Berlin.*
Dustin, True Page, *e e*	*Berlin.*
Eastman, Harold Moses, *c*	*Franklin.*
Garland, Irving Robinson, *a*	*Lakeport.*
Garland, Russell White, *e e*	*Manchester.*
Halvorsen, George Arthur, *a* and *s*	*Berlin.*
Ham, Guy Leslie, *c*	*Tuftonboro.*
Heath, Carroll Richard, *c*	*South Danville.*
Jesseman, Leroy Dexter, *a*	*Franconia.*
Joslyn, Clyde Frederic, *a*	*Durham.*
Kelley, Charles George, *a*	*R. R. 2, Pittsfield.*
Key, Yuling George, *c*	*Shanghai, China.*
Ladd, Daniel Watson, Jr., *a* and *s*	*Epping.*
McCartney, Howard Ransom, *c*	*Meriden.*
Nudd, Frances Augusta, *a* and *s*	*Hampton.*
Perkins, Gerald Nye, *e e*	*Claremont.*
Place, Walter Roy, *e e*	*Alton.*
Reardon, Timothy Patrick, *e e*	*Concord.*
Sanborn, Smith, *a* and *s*	*Franklin.*
Sellers, Paul Thornton, *a* and *s*	*Franklin.*
Smart, Raymond Woodus, *e e*	*Dover.*
Smith, Fred Carl, *e e*	*Durham.*
Tufts, James Arthur, Jr., *a*	*Exeter.*
Welsh, Russell Hamilton, *a*	*Exeter.*
Wilder, Wallace Whittier, *a*	*Amesbury, Mass.*
Willard, Daniel Phineas Alston, *a* and *s*	*West Upton, Mass.*
Williams, Everett Cook, *a*	*Durham.*
Worster, Della Olivia, *a* and *s*	*Dover.*
Yaxis, Themistocles George, *a*	*Kingston.*

SOPHOMORES.

Name.	P. O. Address.
Bartlett, Arnold Eastman, *a* and *s*	*Manchester.*
Bartlett, William Sanborn, *e*	*Manchester.*
Bean, Raymond Jackson, *a* and *s*	*Laconia.*
Bent, Horace Victor, *a*	*Durham.*
Bonardi, Jack, *c*	*Lebanon.*
Bowden, Raymond Charles, *a* and *s*	*York Beach, Me.*
Brackett, William Henry Langdon, *a* and *s*	*Greenland.*
Broggini, Mario James, *c*	*Milford.*
Bronson, Forrest Dinsmore, *a* and *s*	*Lisbon.*
Brown, Byron Francis, *a* and *s*	*Berlin Mills.*
Brown, Oscar Choate, *c*	*Lebanon.*
Came, Ralph Elbert, *a* and *s*	*Rochester.*
Clark, Byron Humphrey, *e*	*Manchester.*
Cobleigh, Gerald Frederick, *a* and *s*	*Nashua.*
Corriveau, Paul Edward, *a*	*Concord.*
Crafts, Leland Whitney, *a* and *s*	*Newfields.*
Crouch, Leon Meader, *e*	*Durham.*
Davis, Charles Wesley, *c*	*Concord.*
Dearth, Raymond Edson, *a*	*North Haverhill.*
Downing, Edward Hugh, *e*	*Alton Bay.*
Elliott, John Spalding, *a*	*Madbury.*
Emerson, Stuart Baker, *a* and *s*	*Lebanon.*
Farnham, Harry Lothrop, *e*	*Dover.*
Fernald, Brackett Britton, *a*	*Rochester.*
Finley, Nettie Edith Austin, *a* and *s*	*Dover.*
Fogg, Sherburne Hilliard, *a*	*Durham.*
Gamash, Albert William, *a*	*Manchester.*
Garside, John Ingraham, *e*	*Dover.*
Goss, Herbert Albert, *e*	*Berlin.*
Grady, John Leo, *e*	*Dover.*
Grant, Arnold Jay, *c*	*Dover.*
Haines, Ray Edward, *e*	*Lakeport.*
Halvorsen, Henry Olaf, *a* and *s*	*Berlin.*
Hayes, John Paul, Jr., *a*	*Dover.*
Hill, George Benjamin, *a* and *s*	*R. R. 5, Dover.*
Hill, Harold Charles, *a* and *s*	*Laconia.*
Hoitt, Alice Joanna, *a* and *s*	*Durham.*
Hoitt, Carrie Elizabeth, *a* and *s*	*Durham.*
Hopkins, Anna Morse, *a* and *s*	*Lakeport.*
Houston, Max Egbert, *a* and *s*	*Exeter.*
Jenkins, Everett Kelley, *e*	*Loudon.*
Kiley, James Edward, *a*	*Concord.*
Kinder, Roland Hugh, *a* and *s*	*Marlborough.*

Name.	P. O. Address.
Knight, Richard Adams, *e*	*West Concord.*
Langley, Lester Libby, *e*	*Durham.*
Lindquist, Henry, *a* and *s*	*Manchester.*
McCartney, Arthur Orcutt, *a*	*Meriden.*
McCrillis, Neal, *a*	*Whiteface.*
McKone, Esther Gladys, *a* and *s*	*Dover.*
McNeil, Robert Henry, *e*	*Dover.*
Montgomery, Earl Roger, *a* and *s*	*Contoocook.*
Murdoch, Armand Leigh, *a* and *s*	*Dover.*
Murphy, Mary Frances, *a* and *s*	*Somersworth.*
Nash, Marion Edgerly, *a* and *s*	*Dover.*
Osgood, Wilfred Albro, *a* and *s*	*Windham.*
Parker, Walter Francis, *e*	*Marlborough.*
Paulson, Carl Gustav, *e*	*Berlin Mills.*
Plumer, Helen Waldron, *a* and *s*	*R. R. 2, Dover.*
Rand, Karl Fowler, *a*	*Short Falls.*
Reed, Clinton Arthur, *a* and *s*	*Manchester.*
Riford, Lloyd Stephen, *a*	*Lakeport.*
Roberts, Charles Edson, *a*	*Alton.*
Sawyer, Clifford Augustus, *a*	*Atkinson.*
Story, Irving Chellis, *a* and *s*	*Claremont.*
Studd, George Thomas, *e*	*Berlin.*
Swett, Walter Whittier, *a*	*Gossville.*
Taylor, John Walter, *a* and *s*	*North Walpole.*
Thompson, John Fawdrey, *c*	*Tilton.*
Waldron, Lena Vernice, *a* and *s*	*Center Strafford.*
Watson, Earle Elwin, *a*	*Durham.*
Willand, Pitt Sawyer, *a* and *s*	*Dover.*
Wyman, Eugene Leavitt, *a*	*Haverhill, Mass.*

FRESHMEN.

Name.	P. O. Address.
Archibald, Clyde Warren, *e*	*Portsmouth.*
Barnes, William Butler, *a*	*Petersham, Mass.*
Barr, William Henry, *e*	*South Natick, Mass.*
Blake, Eston Lloyd, *a*	*Gilmanton.*
Brown, Harold Sunderlin, *e*	*Manchester.*
Brown, Lloyd Ridley, *a* and *s*	*Concord.*
Bugbee, Ralph Josiah, *a*	*Claremont.*
Burbee, Clifford Hardy, *e*	*Nashua.*
Burke, George Wilbur, *e*	*Concord.*
Burt, Perry Warren, *a*	*Westmoreland.*
Campbell, George William, *a*	*Exeter.*
Carleton, Earle Joseph, *e*	*Nashua.*

Name.	P. O. Address.
Carpenter, Frederic Barron, *a* and *s*	*Lancaster.*
Charbonneau, Genevieve Adrienne Jeannette, *a* and *s*	*Nashua.*
Chase, Guy Wetherbee, *e*	*Londonderry.*
Coffin, Alice Veva, *a*	*Boscawen.*
Cooley, Leon Weston, *e*	*Jaffrey.*
Cram, Theodore Francis, *a*	*Greenwood, Mass.*
Crockett, Dura Prescott, *a*	*New London.*
Davis, Leland Worthen, *e*	*Concord.*
Diettrich, Rosina Martha, *a* and *s*	*Hampton.*
Doeg, Ralph Waldo, *e*	*Exeter.*
Dudley, Marion Grace, *a* and *s*	*Newmarket.*
Dwight, Bernard Henry, *a* and *s*	*Manchester.*
Dyer, Stephen Webster, *a*	*Lawrence, Mass.*
Ellsworth, Frank Drew, *a*	*Pembroke.*
Flanders, Mildred Maleham, *a* and *s*	*Rochester.*
Flanigan, John Peter, *e*	*Exeter.*
Fletcher, Pearley Eugene, *e*	*South Lyndeboro.*
Frizzell, Edward Reuben, *a*	*Keene.*
Fuller, Edward Deering, *e*	*Atkinson.*
Goodwin, Daniel Henry, *a*	*Hollis.*
Hadley, John Corbin, *a*	*Durham.*
Hallisey, Helen Agnes, *a* and *s*	*Nashua.*
Hawkins, Leon Abbott, *a*	*Plymouth.*
Hayden, Philip Alden, *a*	*Hollis.*
Hayes, Robert Foss, *e*	*Dover.*
Hobbs, James Francis, Jr., *a* and *s*	*North Hampton.*
Holton, Horace Gibson, *a*	*Lancaster.*
Hooper, Albert Gordon, *a* and *s*	*South Berwick, Me.*
Howard, Wesley E., Jr., *a*	*Belmont.*
Hoyt, Ernest Washington, *a*	*South Berwick, Me.*
Hurd, Norman Cannavan, *e*	*Dover.*
Jenness, Marion Ruth, *a* and *s*	*Dover.*
Johnson, Sadie Brown, *a* and *s*	*Petersham, Mass.*
Johnson, Stephen Guy, *a*	*Winchester.*
Jones, Flavia Locke, *a* and *s*	*Exeter.*
Kelley, Everette Harmon, *a*	*Barnstead.*
Kidder, Harold Soule, *e*	*Durham.*
Lary, John Dana, Jr., *e*	*Berlin.*
Lord, Royal, *e*	*Union.*
McCartney, Robert Irving, *e*	*Meriden.*
McGreal, Michael Reilly, *e*	*Somersworth.*
Manning, Edgar Thompson, *e*	*Nashua.*
Manter, Frederick Sanford, *e*	*Manchester.*

Name.	P. O. Address.
Mitchell, Marion Edwena, *a* and *s*	*Newmarket.*
Morse, Stephen Noyes, *a*	*Ashland.*
Nelson, George Albert, *a* and *s*	*Exeter.*
Nelson, Westly Joseph, *a*	*Manchester.*
Parker, Ralph Harthan, *e*	*Kingston.*
Partington, William Remick, *e*	*Portsmouth.*
Pattee, Wardner Richard, *a*	*Goffstown.*
Pennell, Philip, *e*	*Gossville.*
Perkins, Vincent Aubert, *e*	*Claremont.*
Pettee, Charles Swett, *a*	*Durham.*
Philbrick, Leonard Parker, *e*	*North Hampton.*
Preston, Frank Prescott, *e*	*New Hampton.*
Price, Fishel, *a*	*Wolfeboro.*
Purington, James Alson, *a*	*Hopkinton.*
Reed, Bernice, *a* and *s*	*Grantham.*
Rines, Clinton Furber, *a*	*Portland, Me.*
Runnals, Herbert Richard, *a*	*West Lebanon.*
Sanborn, Eldred Louis, *a* and *s*	*Lochmere.*
Sargent, Neil Abner, *e*	*Concord.*
Sawyer, Kenneth Earl, *e*	*Manchester.*
Scruton, Herbert Ambrose, *e*	*Dover.*
Smith, Robert Carl, *e*	*Exeter.*
Smith, Victor Haskell, *a*	*Hudson.*
Steele, Harold Arthur, *e*	*Manchester.*
Sullivan, Joseph Albert, *e*	*Dover.*
Swain, Howard Eugene, *e*	*Exeter.*
Swett, Earle Frederick, *a* and *s*	*Andover.*
Tapley, William Thorpe, *a*	*Revere, Mass.*
Torrey, Robert Jordan, *a* and *s*	*Putnam, Conn.*
Waite, Walter Ira, *e*	*Concord.*
Waldron, Carroll Charles, *e*	*Center Strafford.*
Waldron, Etta Seward, *a* and *s*	*Center Strafford.*
Watson, Philip Wilder, *e*	*Durham.*
Weigel, Charles Adolph, *a*	*Durham.*
Wheeler, Floyde Charles, *e*	*Nashua.*
Wheeler, George Arthur, *a*	*Petersham, Mass.*
White, Nellie Lydia, *a* and *s*	*Enfield.*
Wilson, John Parker, *e*	*Plymouth.*
Work, Olin Charles, *e*	*Exeter.*
Yeaton, Russell Stewart, *a*	*Short Falls.*

SPECIALS.

Name.	P. O. Address.
Davis, Wendell Phillips	*Durham.*
Muth, John	*Amsterdam, Holland.*

Name.	P. O. Address.
Odiorne, Benjamin Gilbert	*Rye.*
Page, George Haines	*Dover.*
Piper, Ralph Boutelle	*Durham.*
Sanborn, Howard Weaver	*Lochmere.*
Ward, Paul Stanwood	*Nashua.*
Wells, Nathan Holmes	*Kennebunk, Me.*

TWO YEAR COURSE.

Second Year.

Name.	P. O. Address.
Barton, Charles Andrew	*Upton, Mass.*
Batchelder, Harry Conrad	*Peabody, Mass.*
Bean, Benjamin Bickford	*Piermont.*
Beaven, Clarence Theodore	*Durham.*
Blodget, Chester Buck	*Worcester, Mass.*
Bodwell, Jonathan Moore	*Sanbornton.*
Brown, Byron Robie	*Candia.*
Chase, Philip Leroy	*Ossipee.*
Cole, Warren Asa	*Keene.*
Converse, Carl Rondo	*East Rindge.*
Dawson, John Wilfred	*Greenland.*
Graham, Clifford Loyd	*Candia.*
Hardy, Charles Richardson	*Brookline.*
Huse, Gordon Bancroft	*Durham.*
Jacoby, Herbert Eugene	*Newburyport, Mass.*
Kendall, Herbert Lindsay	*Worcester, Mass.*
Pascoe, William Henry	*Freedom.*
Priest, Roger Alexander	*Littleton, Mass.*
Richardson, Ellsworth Albie	*Littleton.*
Robie, Albion Everett	*Candia.*
Robinson, Guy Chester	*Marlborough.*
Robinson, William Henry	*Elmwood.*
Rutter, Everett Rogers	*Lawrence, Mass.*
Sawyer, Roscoe Alfred	*East Jaffrey.*
Smith, Albert Eaton	*Hudson.*

First Year.

Aldrich, George Milton	*Whitefield.*
Arnold, Francie Herbert	*North Pembroke, Mass.*
Arnold, George Bartlett	*Stoneham, Mass.*
Ayer, Ross Alvin	*Marlow.*
Bailey, Nahum Oscar	*Sunapee.*
Barton, Chauncey	*North Hampton.*
Batchelder, Lester Ward	*Greenville.*
Bigelow, Palmer Wilson	*Worcester, Mass.*

Name.	P. O. Address.
Bishop, Clifton Louis	*Lisbon.*
Bishop, George Cornelius	*Center Sandwich.*
Bissell, Ralph Howard	*Keene.*
Brailsford, Albert	*Lawrence, Mass.*
Butman, Chester Alden	*Lynn, Mass.*
Collamore, Horace Whitman	*East Bridgewater, Mass.*
Cram, Arthur T.	*Manchester.*
Cree, Harold	*Colebrook.*
Daniels, Carleton Richards	*Dedham, Mass.*
Davis, Harry Pomeroy	*Dorchester, Mass.*
Dodge, Harold Leslie	*Beverly, Mass.*
Dodge, James Arthur	*Concord.*
Dodge, Rodney Marston	*Beverly, Mass.*
Drew, George Wentworth	*Milton.*
Farrington, Wendell Maynard	*Milton, Mass.*
Groves, Reuben Spaulding	*Nashua.*
Gummerson, Claron D.	*Jaffrey.*
Hall, Elmer Oliver	*West Lebanon.*
Holmes, Russell Herbert	*Charlestown.*
Humiston, Frank	*East Jaffrey.*
Jaquith, Hollis Proctor	*New Ipswich.*
Jaquith, Milo Warren	*New Ipswich.*
Keniston, Ralph Hosmer	*East Kingston.*
Lane, Harold William	*Lancaster.*
Langley, Wayne Leland	*Durham.*
Lathrop, Harold Elwyn	*Canaan Center.*
Little, Harold Benjamin	*Colebrook.*
McCarten, William Leonard	*Lancaster.*
McKenzie, Edward J.	*Franconia.*
Marat, Walter	*Lawrence, Mass.*
Merrill, Leonard Abbott	*Antrim.*
Moore, Raymond Howard	*North Woodstock.*
Morrison, Samuel Roswell	*Orford.*
Mosher, Albert Erlon	*Gorham, Me.*
Moulton, Ralph Waldo	*Brockton, Mass.*
Nelson, Ernest S.	*Mill Village.*
Paul, Edward Alexander	*Meredith.*
Phair, William Thomas	*Warren.*
Pitman, Ralph Read	*Wakefield, Mass.*
Ryder, Lorraine Endicott	*Barnstead.*
Sheehy, Thomas Russell	*Newfields.*
Woodman, Harold Graham	*West Somerville, Mass.*
York, Charles Harold	*Dover.*
Young, Carroll Henry	*Walpole.*

TEN-WEEK COURSE.

Name.	P. O. Address.
Beattie, John Gillespie	*Guildhall, Vt.*
Dana, Burton Giffin	*Keene.*
Day, G. Clarence	*West Kennebunk, Me.*
Gaynor, Albert	*Bemis.*
Gilpin, Dana S.	*Westfield, Vt.*
Hardy, Earl	*North Haverhill.*
Kibbey, Elmer F.	*Newport.*
Lilley, John L.	*Waterbury, Conn.*
Magill, Clarence Emerson	*Hinsdale, Mass.*
Norcott, Karl D.	*Coös.*
Norton, Herman Lester	*North Hampton.*
Ross, Benjamin	*Syracuse, N. Y.*
Thomas, Robert	*Danbury.*
Titus, Daniel F.	*North Haverhill.*
Tourtellotte, Ernest A.	*Mason.*
Walkeen, C. B.	*Windsor, Vt.*
Whiteside, Frank M.	*Mt. Hermon, Mass.*
Wilson, Edward Ray	*Contoocook.*

SUMMARY.

Graduate Students	1
Seniors	46
Juniors	37
Sophomores	72
Freshmen	95
Special Students	8
Students in Two-Year Course	77
Students in Ten-Week Course	18
Students in One-Week Course	273
Total	627
Total (not including One-Week Course)	354

FORMS OF BEQUEST.

BEQUEST FOR GENERAL PURPOSES.

I give and bequeath to the President and Trustees of The New Hampshire College of Agriculture and the Mechanic Arts, of Durham, New Hampshire, the sum of.....dollars, to be used for the general purposes of said Institution.

SCHOLARSHIP BEQUEST.

I give and bequeath to the President and Trustees of The New Hampshire College of Agriculture and the Mechanic Arts, of Durham, New Hampshire, the sum of.....dollars for the purposes of founding a scholarship in said Institution, to be known as the .....Scholarship, the principal to be kept inviolate and the income to be applied for the benefit of any student designated by .....or by the Faculty of said Institution.

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